

JULY
1953

Route this to:

The Cover Picture

Terramycin is the outstanding development of the Chas. Pfizer group . . . but they are also honored here for their part in making antibiotics a practical possibility . . . page 6

PUTMAN PUBLISHING CO., CHICAGO

Creators of PUTMAN-STYLE Magazines
... terse, vital editorial; "hand-picked" circulation; square, high-visibility format; quality readership; hence more READER ACTION

for men who manage

CHEMICAL PROCESSING

Highlights

of This Issue

Matching paint colors is no snap but color instrument can spot hairline differences . . 10

Easier elastomer compounding, enhanced cured physicals point to utility and versatility of process aid 18

Factors considered from birth to marketing of new chemical products 40

Torque reaction powers meter for solids flowing 25 to 225 pounds/minute 62

Microchemical petroleum laboratory — a valuable asset and useful tool 84

Fills sulfuric acid solution at rate of 40 to 50 quarts per minute 96

Victor chemical protects product purity with permanent magnets 130

24 year protection provided by clay-asphalt coating . . 136

(Continued on page 4)

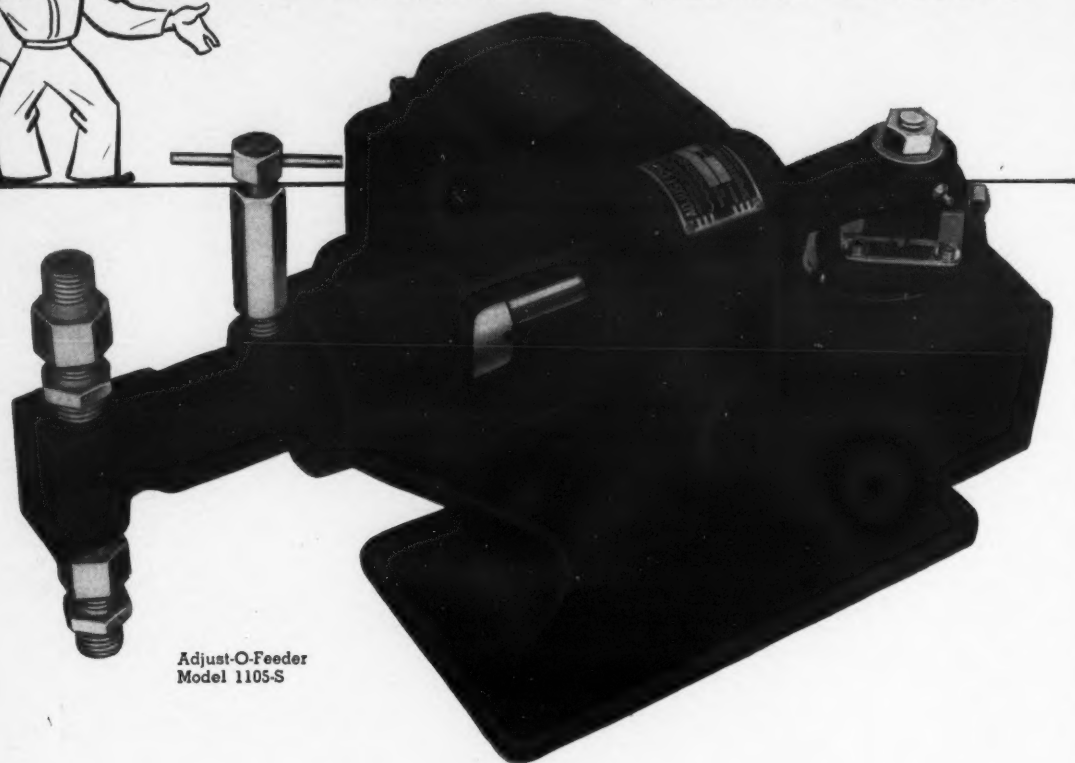


Pfizer's JOHN E. McKEEN
Pioneer of Progress — in antibiotics



NEW PROPORTIONING PUMP PACKAGE

FOR ADDITIVES OR CHEMICAL REAGENTS



Adjust-O-Feeder
Model 1105-S

- **LOW COST**
- **COMPACT**
Built-in standard motor — no separate gearbox or couplings.
Built-in oil-enclosed gear reducer.
- **MICRO-STROKE ADJUSTMENT**
Scale easily read — crank and connecting rod operate in horizontal plane.
- **LONG LIFE AND EASY MAINTENANCE**
One-piece Meehanite iron frame for positive alignment of all moving parts.
Double check valves on suction and discharge easily removable.

This new, compact proportioning pump, by %Proportioneers, Inc.%, is inexpensive and meets most requirements for a low capacity, medium pressure chemical feed pump. The standard Model 1105-S has a capacity range from 1 to 10 GPH and will discharge against pressures up to 650 psig. For lower feeds, the unit is available with a range of from 0.5 to 5 GPH. Complete and self-contained, Model 1105-S weighs less than 100 lbs. and is ready to operate.

Ask for Bulletin 1105

%PROPORTIONEERS, INC.%

Write to %PROPORTIONEERS, INC.%, 387 Harris Ave., Providence 1, R. I.

Technical service representatives in principal cities of the United States, Canada, Mexico and other foreign countries.



"That's Interesting"

'Corporate' helicopter links 8 plants

A seven-passenger helicopter is being used by Rockwell Mfg. Co. to solve its transportation problems between the main offices in Pittsburgh and seven plants within a 200-mile radius. Used to move executives and manufacturing components on an emergency basis the plane is generally located in the company's parking lot. The president of Rockwell regards the new addition as an effective management tool in coordinating and efficiently utilizing management manpower.

Sun takes safety role

Lights on top of the building of the Staley Mfg. Co's are being triggered by photo-relays which are sensitive to light. As the sun sets in the evening, the lights located on top of the building will go on.

They burn until the rising sun, increasing the intensity of light, turns them off. The lights are intended to warn approaching aircraft of the position of the building.

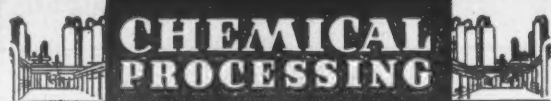
Smoke stack with a glass lining

The A. O. Smith Corporation has installed industry's first glass-lined smoke stack in a Milwaukee steel plant. The 44 foot long stack is coated inside and out with two glass linings, each approximating five one-thousandths of an inch in thickness. The acid-resisting glass is intended to combat the normal corrosion of metal caused by acid condensate in the smoke.

Use lighting to avoid insects in summer

Recent investigations by a General Electric engineer indicate that nocturnal flying insects can be controlled during summer evenings by the color of lighting used. Their eyes are sensitive to blue light and to near-ultraviolet rays, which are almost invisible to humans. To attract bugs you use a blue or ultraviolet light, and to refrain from attracting them you use a light bulb which produces neither of these (yellow, red, or orange).

For more information on product at left, specify CP 2206 . . . see information request blank between pages 2 - 3.



(CHEMICAL PROCESSING PREVIEW)

For MEN WHO MANAGE

Vol. 16

July, 1953

No. 7

Russell L. Putman *President and Publisher*
Ewing W. Graham *Vice President and General Manager*
Nathaniel Beck *Vice President and Sales Manager*
Kenneth S. Kaul *Vice President*
Harris N. Pickett *Vice President*
Carroll H. Thomas *Vice President*
George W. N. Riddle *Director of Development*
Daniel J. Hansen *Circulation Manager*
W. E. Rennolds *Office and Personnel Manager*
Raymond C. Clifford *Production Manager*

Advertising Representatives

CHICAGO 11, 111 East Delaware Place, Whitehall 4-6141, C. H. Thomas, Vice Pres.; Charles H. Oestmann, Richard H. Putman
ATLANTA 3, Five Ivy Building, N. E., Lamar 4719, Edward M. Buck, Inc.
CLEVELAND 6, 10006 Carnegie Avenue, Sweetbriar 1-8138, Harris N. Pickett, Vice Pres., H. F. Smurthwaite
DALLAS 1, 1334 Fidelity Union Life Bldg., 1511 Bryan Street, Riverside 4042, Edward M. Buck Inc.
DETROIT 35, 18482 Coyle Ave., Vermont 6-3244, Frank E. Landry
LOS ANGELES 53, Granada Building, 672 So. Lafayette Park Place, Dunkirk 8-2286, Bob Wettstein
NEW YORK 17, 369 Lexington Avenue, Murray Hill 6-7738, Kenneth S. Kaul, Vice Pres.; Charles J. Stillman, Jr., John C. Jones, Robert F. Lewis, Norman A. Schuele, Jr., Henry C. Ruppel, Edward M. Buck
PORTLAND 5, 1220 S.W. Stark Street, ATwater 4107, (Bob Wettstein)
ROCHESTER 17, 169 Montclair Drive, Charlotte 3315-W, James W. Connell
ST. LOUIS 13, St. Margaret Ct., Florissant, Mo., Terryhill 7-3137, Donald F. Maguire
SAN FRANCISCO 8, Howard Bldg., 209 Post Street, YUkon 6-2522, (Bob Wettstein) Jerry Nowall

Over 35,000 Circulation in Chemical Process plants

Chemical & Allied Products	Food Products	Public Utilities, Consultants, Govt.
Coke Oven Products	Leather Tanning	Rubber Products
Composition Materials, Fiber, etc.	Lime & Cement	Soap and Cleaning Compounds
Distilleries and Breweries	Metallurgical, etc	Stone, Clay & Glass Products
Drugs, Cosmetics & Pharmaceuticals	Paint & Varnish	and allied Lines (Carbon Glue, Oils, etc)
Fertilizers	Paper and Pulp	
	Petroleum Refining and Products	
	Plastic, Cellulose, Rayon, etc	

Subscriptions

QUALIFIED-READER SUBSCRIPTION are accepted from selected management and technical key-men in the chemical industries without charge. To apply for a qualified-reader subscription see request-qualification form opposite inside front cover.

Published Monthly by

PUTMAN PUBLISHING COMPANY

111 East Delaware Place, Chicago 11, Illinois
 Whitehall 4-6141

Copyright 1953 by Putman Publishing Company

Member
 National Business Publications, Inc.
 Controlled Circulation Audit, Inc.



FLOWLINE

WELDING FITTINGS

Stainless Steels, Monel, Nickel

BRING ALL THE ADVANTAGES
 OF WELDED CONSTRUCTION
 TO USERS OF
 CORROSION-RESISTANT PIPING

More than 3000 Stock Items

FLOWLINE Welding Fittings are stocked throughout the country by leading warehouses specializing in corrosion-resistant metals, in Schedules 10, 40, and 80 (Schedule 5 also available)—sizes 1/2 inch through 12 inches—in stainless steel Types 304, 316, and 347; Monel, Nickel, and Aluminum. With FLOWLINE Fittings it is practicable for users of corrosion piping to obtain the fullest economy and efficiency of simplified welded construction—in design, installation, operation, and maintenance.

Welded construction provides greatest freedom in designing the layout. The system uses less space, is lighter in weight, and can be assembled and put into service faster. It is permanently leak-proof, has greater strength, longer life, and best flow characteristics. FLOWLINE corrosion-resistant fittings include tees, stub ends, elbows, reducers, and caps. All are made of forged or wrought metals, cold formed by our exclusive process and annealed, putting the metal in the best condition for corrosion service.

WELDING FITTINGS CORP.
 NEW CASTLE, PENNSYLVANIA
 World's Largest Manufacturer of Stainless Welding Fittings

When inquiring check CP 2207 on handy form, pgs. 2-3

In this Issue



On the facing page you will find a tribute to Harry McCormack who recently passed away.

His passing, at 76, rounded out an outstanding career of service to the chemical processing field. Mac's primary interests in education and consultation work provided an outlet for his energy and active mind.

As Technical Editorial Director of CHEMICAL PROCESSING "Mac" was active, busy, and happy to the last. In his association with us, he could always draw on some active and practical experience to appraise or assist in our work.

We, as well as his many friends in the industry, will miss his friendly spirit and his ready wit.

The patents, processes, designs, and writings of the man are something apart from him — but they attest the enormous accomplishment of his life and work. Even in grieving his passing, those who knew him well feel that there are but few men who could have lived such a full and satisfying life.

John C. Vaaler

EDITOR

editorial highlights

Polymerizes, copolymerizes to form endless number of useful reaction products	30
"How to weigh it" lab rounds out first year of work	42
Control of pulp consistency means that boxboard meets specs economically	58
Good maintenance program increases storage battery life by as much as 50 per cent	72
X-ray photometer gives method for rapid, quantitative analysis of many chemical systems	92
Up to 200 bottles per minute capped by rotary unit	100
Stauffer stops fan corrosion with silver metallizing	104
Devise unique system to combat incipient fires in storage bins for sludge	118
Efficiency of centrifugal collector is over 99.9% on air loaded with micron size dust	134
Time saved by self-cleaning fluid strainers for large volume liquid lines	160

editorial sections

That's Interesting	2	Safety	118
New Solutions of Processing Problems	8	Expanding Chemical Production	128
Materials	18	Processing Equipment	130
Ideas	40	Construction and Maintenance	136
Instrumentation & Control	58	New Literature	166
Material Handling	72	Processing and Engineering Data	168
For the Laboratory	84	Convention & Exhibit Schedule	185
Recent Books	94	Advertisers in This Issue	190
Packaging	96		
Corrosion Control	104		
Briefs	116		

editorial staff

Editor

John C. Vaaler

Associate Editors

Dana B. Berg

M. Bruce Smith

Assistant Editors

Bruce Fader

Walter J. Banke

Karl Beliakoff

Gary R. Smith

Gordon Weyermuller

C. Richard Mann

Roy G. Helsing

Editorial Assistants

Helen Hennings

Caroline Serewicz

Anna May Burke

Art Editor

H. W. Lichtenberger

special services for readers

1. When you want more information on processes, controls or developments of products discussed in this issue, see Reader Service slip opposite page 2

2. If you are looking for information on specific products, use the Product Directory "Quick-locator" for all types of materials, instruments, processing equipment, etc. This Product Directory lists everything in this issue, with page references

3. If you want to subscribe to this magazine, see reader-qualification form opposite page 3

Passing of HARRY McCORMACK Ends Notable Career



A notable career has come to a close with the passing of Harry McCormack, Technical Editorial Director of Putman Publishing Company. His entire life, right up to the very last was one of action, progress, success — ever happily pursuing his many interests, giving service.

We paid special tribute to his many activities — covering a span of more than half a century as scholar, engineer, educator, researcher, consultant, author, and editor — in our March issue. At that time the American Chemical Society also honored him with its fifty-year certificate.

For 38 years he was head of the Department of Chemical Engineering at Illinois Institute of Technology. His pioneering spirit manifested itself not only in the development of chemical engineering as a science and profession, but in his approach to industrial publishing.

Professor McCormack felt that he was fortunate to have lived during "the chemical century" as he termed it — and his many contributions have been factors in the advances that have been made.

Now this active career is closed. But the force, the vigor and the spirit he lent to every endeavor with which he was associated will be perpetuated throughout the fields he served so well. For years to come, we of Putman Publishing Company will continue to feel the influence of his character, his guidance, and his friendship.

Others will pick up his work where he leaves off. No one can replace him.

Russell L. Putman

PUBLISHER

Jefferson... for highest — quality

ETHYLENE OXIDE

Available immediately in tank cars and in ICC 5P insulated drums (400 lbs. net) or in samples for your preliminary investigations.

Address inquiries to Department D.

Produced by specialists in "essential chemicals from hydrocarbon sources."

Ethylene Oxide
Ethylene Glycol
Ethylene Dichloride
Diethylene Glycol
Monoethanolamine
Diethanolamine
Triethanolamine
Nonyl Phenol
Morpholine
Ethylene Carbonate
Propylene Carbonate
Diethylethanolamine
Hydroxyethyl Morpholine

Jefferson
CHEMICAL COMPANY, INC.

260 MADISON AVENUE, NEW YORK 16, N. Y.

Branch Sales Offices: 180 West Washington St., Chicago 2, Ill.; 318 Main Building, Houston 2, Texas
Sales agent: Nelson A. Howard, Jr., 900 Wilshire Boulevard, Los Angeles 17, California
Washington Office: 1000 New York Building, Washington, D. C.

Briefs

From recent literature

No. 4 in a Series

Copolymers of vinylidene chloride and ethylene oxide made by reacting the materials in an aqueous medium at moderate temperatures, usually from 35 to 60°C, using an emulsifying agent and polymerization catalyst are readily molded at 135°C. Unmodified vinylidene chloride polymer can only be molded above 180°C.

A fumigant consisting of ethylene oxide and ethylene dichloride may be used in the packaging of dried fruit to destroy the bacteria, molds, and yeasts without heat treatment. The application is made using small pervious cartons which are sealed in a larger master container.

Petroleum emulsions of the water-in-oil type may be resolved by subjecting the emulsion to the action of a demulsifier which is an oxyalkylation product of ethylene oxide and a hydroxy-acetic acid-esterified ethylene oxide-modified phenol-aldehyde resin.

A water-insoluble hard resin is yielded by the reaction of ethylene oxide with petroleum hydrocarbon-insoluble pine wood resin. Ethylene oxide is gradually charged to an autoclave containing the pine wood resin and a sodium methylate catalyst. Agitation is used and reaction temperature is maintained at temperatures from 100 to 140°C.

These developments are abstracted from recent publications or U. S. patents. They may suggest applications of Jefferson Ethylene Oxide in your products or processes.

When inquiring check CP 2208 on handy form, pgs. 2-3

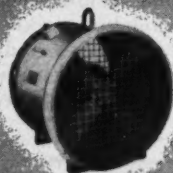
FOR HAZARDOUS LOCATIONS USE— CHELSEA EXPLOSION-PROOF FANS



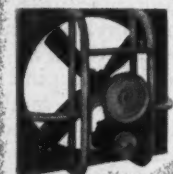
• TYPE PLEK POWER LINE
DUCT BOOSTER—Motor ex-
posed to Air Stream, 16" to
48" in all H.P. ratings.



• TYPE PLEK POWER LINE
DIRECT DRIVE — 16" to 48"
in all H.P. ratings. Square
frames for easy installation.



• TYPE PLEK POWER LINE
AIR BLASTER—For spot cool-
ing — available on pedestal,
16" to 48" in all H.P. ratings.



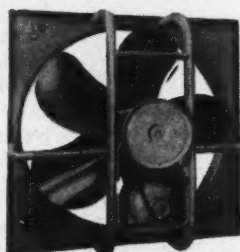
• TYPE PLEK POWER LINE
BELT DRIVEN — 24" to 48"
in all H.P. ratings. Square
frames for easy installation.

THE ABC OF SAFETY— Always Buy Chelsea!

Performance-proven CHELSEA explosion-proof fans meet rigid ventilating and exhaust specifications to the letter. For hazardous locations, specify CHELSEA type fans supplied with Class I, Group D motors, and non-ferrous, non-sparking propellers. Ask CHELSEA for recommendations for your particular processing or industrial need—address Dept.

Type IND Industrial Fan

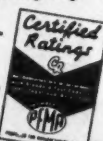
for general ventilating and comfort cooling in factories, foundries, plants, mills, laboratories, etc.



- Belt Driven • Streamlined Orifice
- Precision Balanced Blades • Ball Bearing Equipped Motor and Shaft.
- All Steel Welded Construction

Chelsea Type IND is a heavy duty fan recommended for general industrial service. Flexible and efficient, it is capable of moving large volumes of air.

Look for this Seal
of Certified Ratings
Look for this
Symbol of Quality



CHELSEA FAN & BLOWER CO., Inc.

PLAINFIELD, NEW JERSEY



JOHN E. MCKEEN

PIONEERS OF PROGRESS

For centuries, great minds have been contributing ideas we use in our never ending battle with disease. But only in the last decade or two have we seized the initiative in this war against the germ. John E. McKeen, president of Chas. Pfizer and Company, represents an ingenious group who have added knowledge to our store and years to our lives with . . .

MIRACLES from MOLDS

LARGE-SCALE use of antibiotics is a tremendous achievement in conserving human resources. And, like most of the important technological developments of recent history, the present state of knowledge in the field is the result of thousands of contributions from men in many places and many times.

It is recorded that 2500 years ago, the Chinese were treating boils with moldy soy bean curd. Pasteur learned that common bacteria from the air destroy anthrax bacillus. Ehrlich dreamed of producing specific chemical remedies for common diseases. Just about a quarter century ago, Fleming discovered the bactericidal power of penicillin — though, at the time, "penicillium" was the name of a genus of molds and nothing else.

The learning process inevitably must precede the "doing" process . . . developments of theory, gathering of data; tests and experiments made before antibiotic cures could be realized were all absolutely necessary. Yet, the short time needed to bring these miracle drugs out of laboratories and into hospitals and homes — and at that time, to the world's battle-fronts — remains as startling as the very materials themselves.

Medical Magic

England's Dr. Alexander Fleming, of course, was first to know of the bacteria-killing power of the common mold that accidentally inoculated one of his cultures. Fortunately for us, he noted the bacteria-free ring surrounding the mold in the culture dish even though he was not looking for antibiotics. Dr. Howard W. Florey was looking for antibiotics eleven years later when he and his associates at Oxford forced the mold to give up a little of this strange new material, penicillin. The work took months: the result was a little less than a teaspoonful of impure penicillin. The first human test

was a failure — but it failed, apparently, because there was simply not enough penicillin available.

An English "Bobby", badly abscessed and with bloodstream poisoning, was given the meager supply. His case had been hopeless, yet while he was receiving the drug he improved . . . for five straight days. Then the penicillin gave out. His position grew worse. He died.

A second case failed. With more months of work, Florey and his group prepared more penicillin — this time enough. And the third patient to receive this new antibiotic treatment, a boy judged to be beyond hope, was saved. The Oxford group had satisfied themselves that penicillin could work these wonders, but the feeling was general that antibiotics were as miraculous as a magic wand — and just as unattainable.

Production Magic

War had come to England. Florey saw the London blitz first-hand and he determined to do the impossible. He would make these tiny molds give up enough medicine to treat the wounded and dying he saw. Florey and his co-worker, Norman Heatly, came to America with a question, "Can you mass-produce this material?" The answer they wanted was "yes."

Biochemists here had already started to investigate the problems when they arrived. Three companies — Merck, Squibb, and Pfizer — and later 17 other American companies joined with our Government and the English scientists. Conferences of this group indicated that the answer was "yes" and in the spring of 1943 production began. Up to this time, enough penicillin had been made to treat about 400 patients. By the end of the war, enough was produced each year to treat 7 million patients.

Scaling up from micrograms to tons was just as diffi-

cult as it sounds. Fermentation broths prepared by Florey had had about one part per million of penicillin (there is more gold in seawater) and the penicillin itself was a fragile material, easily destroyed. One of the first requirements of the commercial process was exclusion of unwanted organisms. Since conditions were to be perfect for penicillin mold to grow, they would also be favorable to other microorganisms . . . and Nature had provided at least some of these others with the ability to produce a penicillin-destroying enzyme.

Production started with mold grown in milk-bottles. An indication of the task is the fact that 1500 gallons of broth had to be handled to produce enough for one patient sick with an infection. In order to achieve needed production, plants would have had to exceed the milk bottling capacity of the entire United States.

Deep tank fermentation of antibiotics was developed at Pfizer. It had the obvious advantage of eliminating milk bottle operations. Not so obvious is the problem of supplying air to mold in the tank — thousands of cubic feet of air per minute had to be sterilized and fed to the tanks. And when this had been accomplished, there was more research to find what added nutrients molds liked — in order to boost production again.

New Objective — Terramycin

Penicillin was a hard-won beachhead in our war against disease. Several important antibiotics have been discovered and put to use since its exploitation. But all but two of these, prior to 1950, were "narrow spectrum" drugs. In that year Pfizer introduced Terramycin, a "broad spectrum" drug. In addition to organisms which can be handled with penicillin, it is effective against certain gram-negative bacteria, rickettsia (Rocky Mountain Spotted Fever), viruses, and protozoa.

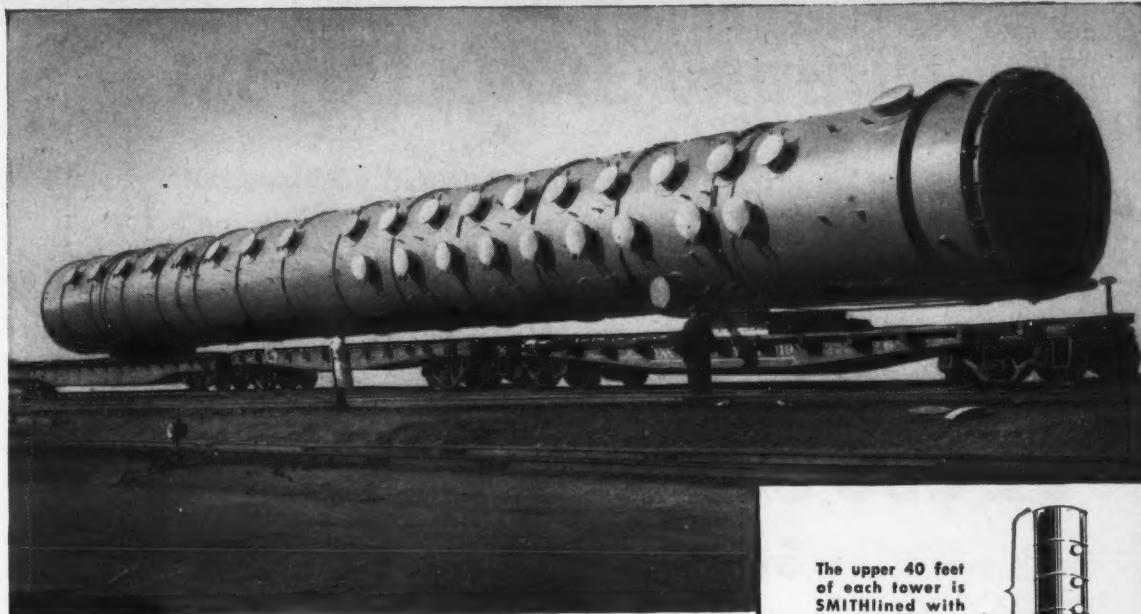
The enormous amount of work that had gone into large-scale production of penicillin was an important factor in Pfizer's ability to bring Terramycin into production within a year after its discovery. John E. McKeen, president, and John L. Davenport, executive vice-president of the company, headed up this whole operation.

Hundreds of people . . . missionaries, airline pilots, and other world travelers . . . contributed to this work by sending soil samples to the Pfizer labs. Jasper H. Kane established the screening program through which samples were tested and Terramycin was found. As director of biochemical research and development, his work extended to finding information needed for design of fermentation equipment.

At this stage of the work, Dr. W. A. Lazier, director of chemical research and development, took over to provide data on Terramycin itself, so that it could be recovered from the process.

Herman A. Poitras, vice-president of manufacturing, assisted by general manager of manufacturing A. J. Greene, directed all parts of the commercial production. Only by strict scheduling were they able to

(Continued on page 175)



First of two atmospheric towers erected in The Standard Oil Refinery, No. 1, Cleveland, Ohio, each 130 feet high, 13 feet O.D. including nozzles and manways, and weighing 200,000 pounds.

THREE-STAGE atmospheric tower FOR SOHIO

A. O. Smith Process of "Smithlining" Permits Three Selective Linings in a Single Vessel

The economical solution of varying corrosion conditions in a single vessel is exemplified in the construction of two unusual atmospheric towers for The Standard Oil Refinery No. 1, Cleveland, Ohio.

Three types of lining, each specific for the corrosion condition in each of the three stages in the tower, were selected and

bonded to the carbon steel structure by the A. O. Smith process of Smithlining.

Smithlining is the closely controlled resistance welding process of inseparably bonding alloy sheets to carbon steel vessel walls. Most alloys can be applied by this process. All liner materials can be rigidly inspected as to gauge requirements, surface finish, chemical analysis, mechanical properties and corrosion requirements prior to attachment.

The two towers were ordered and erected

The upper 40 feet of each tower is SMITHlined with Monel to resist corrosive acid vapors.

The 40-foot area where "cracking" occurs is SMITHlined with Type 316-ELC Stainless.

The bottom 50 feet is SMITHlined with Type 405 (12% Cr) to resist the corrosive action of hydrogen sulphide (H₂S).



by Arthur G. McKee & Company of Cleveland, Ohio.

For assurance of superiority in vessel design and construction and for aid in solving vessel application problems, call on A. O. Smith, where the industry's leading laboratory, design and engineering groups are at your service.

Contact the nearest office, listed below, or write to A. O. Smith Corporation, Vessel and Heat Exchanger Division, Dept. CP-753, Milwaukee 1, Wisconsin.

INDUSTRY COMES TO A. O. SMITH
WITH HEAT EXCHANGER PROBLEMS



Research and Engineering Building



A.O. Smith

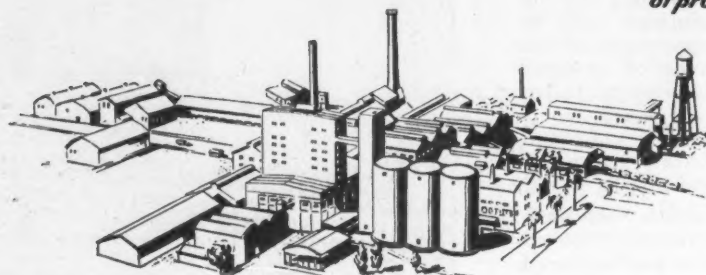
VESSELS • HEAT EXCHANGERS

Chicago 4 • Cleveland 15 • Dallas 2 • Denver 2 • Houston 2
Los Angeles 22 • Midland 5, Texas • New Orleans 12 • New York 17
Pittsburgh 19 • San Francisco 4 • Seattle 1 • Tulsa 3
Washington 6, D.C.

International Division: Milwaukee 1
Licensees in Canada: John Inglis Co., Ltd.

When inquiring check CP 2210 on handy form, pgs. 2-3

*new solutions
of processing problems*



22,000,000 lb of Sugar Stored in Bins — Never Cakes

**Kept free-flowing by air conditioning of chamber
between bin and outer wall**

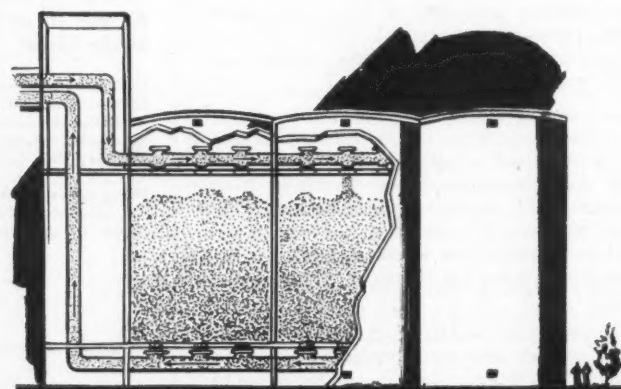


Here, in pack rooms, as throughout the Godchaux plant, sugar is handled under ideal atmospheric conditions. Duct work visible is part of air-conditioning and filter-dust collecting system that prevents sugar from picking up impurities

These storage facilities, unique in the sugar industry, result from basic plans and procedures worked out by Walter Godchaux Jr., a chemical engineer, who is Vice President in charge of operations, W. E. McFarland, plant manager and also a chemical engineer and W. E. Averill who was chief engineer of Godchaux Sugars' Inc. at time installation was planned.

PROBLEM: The idea of holding bulk refined sugar in storage bins and then packaging it as shipping commitments come due, offers many advantages but is generally impractical because humidity and temperature variations result in caking.

Godchaux Sugars' Inc., however, believed that this method of handling had such merit that it tackled the problem of keeping the sugar dry and free-flowing even though location in the New Orleans area imposed relative humidities as high as 90%.

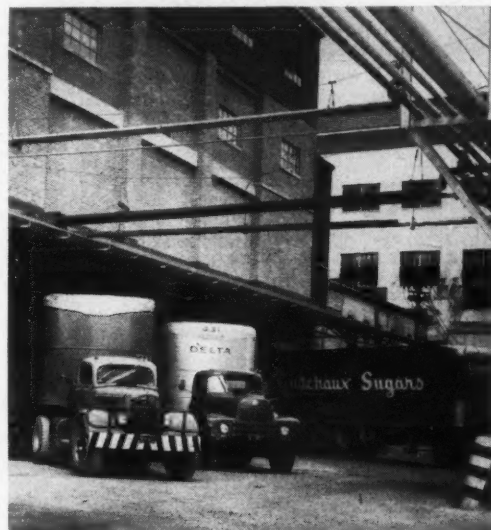


Storage bins are 103' high, 50' diameter with 9" concrete walls. A 13' high basement area at bottom of each bin houses conveyors and air conditioning units. Each bin has double wooden liner providing 2" air space between liner and bin outer wall. Sugar enters and leaves bins through conveyors in tower at left

Normally, such atmospheric conditions made it most difficult to empty sugar from bins. In addition, when the atmosphere is damp enough to create a sugar syrup from the unavoidable dust, damage to modern packaging machines results. This hampers packaging operations, damages machinery, and complicates maintenance.

Solution: Three identical bins of 7½ million lb capacity each are designed to incorporate air-conditioning features that will maintain stored sugar in dry, free-flowing condition at all times. These are shown in drawing which appears on the opposite page.

Each bin is 103' high, 50' in diameter with reinforced 9" thick concrete walls. Bottom of each bin is occupied by conveyors and air-conditioning equipment. Note in cross section diagram that a wooden liner is placed as to form a 2" air chamber between it and the inner wall bin. Conditioned air is constantly circulated through this space in order to maintain sugar at 85° Fahrenheit and relative humidity of thirty-five percent.



To assure packaged sugar remaining dry and free-flowing, radiant heating system is installed in warehouse floor and extends to loading dock. Fork-lift trucks load palletized sugar into highway trailers. RR cars are loaded on opposite side of plant

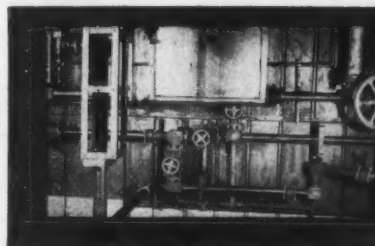
As refined sugar must be withdrawn for packaging to meet order schedules, it is conveyed from bin through screening tower to pack house. Humidity controls have been incorporated in this and other parts of the plant where sugar might be exposed to air and moisture. Packaged sugar is discharged onto conveyors which take it to shipping dept.

Warehouse and loading dock are radiant heated with pipes embedded in the concrete floor. The system comprises five zones in all. Each radiant heating system has a circulatory pump with a capacity of 80 gpm against pressure of 23' head. The supply water temperature can be regulated through a range of 65-140°F.

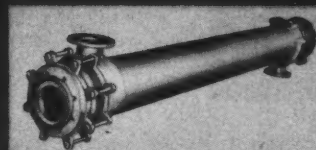
(Continued on page 12)

THE NATIONAL CARBON LINE

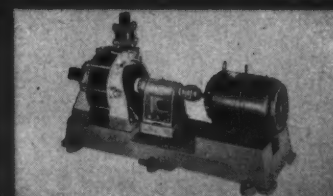
Specify "National" Carbon and Graphite and "Karbate" Impervious Graphite Equipment for Processing and Conveying Corrosive Fluids.



For industry's toughest fluid-conveying requirements. Easy to install and maintain with simple hand tools. Catalog Section S-7000.



Standard or custom-built; shell and tube, concentric and immersion types in stock sizes. Catalog Sections S-6620 S-6670, S-6740, S-6750.



The centrifugal pump for handling corrosive fluids. Rugged, trouble-free design. Handling capacities to 800 G.P.M. Catalog Section S-7200.



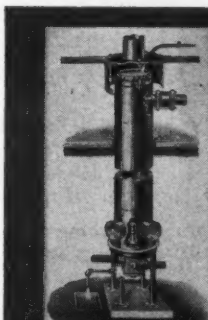
"National" Graphite Ground Anodes for cathodic protection of buried or submerged metal structures. Catalog Section S-6510.



Accepted material for lining tanks, towers, digesters and other vessels containing corrosive chemicals. Catalog Section S-6210.



New "Karbate" coolers feature standardized, sectional construction...high heat-transfer rate...low initial cost Catalog Section S-6820.



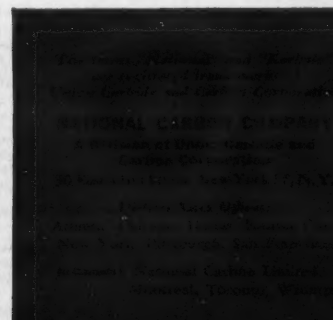
Versatile, standard equipment for hydrogen chloride synthesis. Burns moist gases. Simple in operation. Catalog Section S-7530.



Compact, light-weight unit produces up to 20 tons per day of 22° Baumé acid. Minimum installed cost. Catalog Section S-7460.

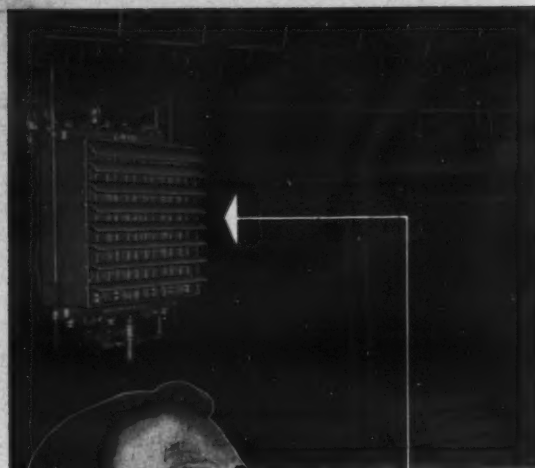


For absorption, fractionation, scrubbing. Easily erected from standard sections and components. Catalog Section S-7350.



For further information
write to
National Carbon Company

When inquiring check CP 2211 on handy form, pgs. 2-3



**Put up to
Stay up!**

*trouble free service for
over 22 years...that's
only one record for...*

GRID UNIT HEATERS

The experience of a large eastern chemical plant is similar to others. In telling of the service of GRID Unit Heaters, this plant says, "We found HCl, Cl₂, etc. . . the unit heaters that have copper tubes give trouble due to corrosion in a few years . . . we consider GRID Unit Heaters satisfactory and would certainly recommend them for installation where corrosive acid fumes exist".

Such service records occur because GRID is completely different from other unit heaters — here's how:

- GRID** is an all cast unit with finned heating sections and headers tested to withstand steam pressures up to 250 # P.S.I.
- GRID** construction uses no brazed, soldered, rolled or welded connections between condenser and headers. A specially designed threaded nipple assures a precision, leak-proof fit.
- GRID** construction has all similar metals in contact with steam, thus preventing electrolytic corrosion which eventually occurs in copper type unit heaters where steam passes from iron pipes into copper cores. (Write for booklet CORROSION IN UNIT HEATERS.)
- GRID** construction resists corrosion from fumes present in most types of industry.
- GRID** design incorporating low outlet temperatures, proper fan sizes and motor speeds, assures delivery of warm comfortable air in ample volume to the working level. No stratification of warm air at the ceiling to waste your fuel dollars.

These are the reasons why users of GRID Unit Heaters get 22 years and more of trouble-free service. There are units cheaper than GRID, but there is none better. You start saving money the day you install GRID Unit Heaters. GET THE COMPLETE GRID STORY — WRITE FOR CATALOG CUM-846-A. GRID Blast Coils are ideal for process drying — write for Catalog BC-1049.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

D. J. MURRAY MANUFACTURING CO.
MANUFACTURERS SINCE 1883 WAUSAU, WIS.

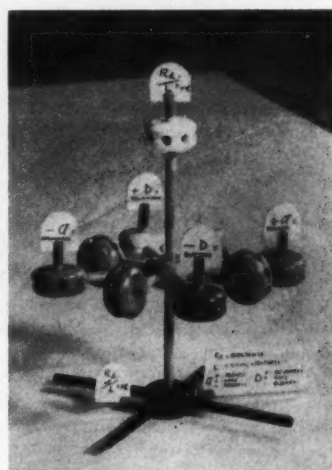


Operator makes three readings to find lightness, redness, and yellowness



**Matching paint colors is no snap
but color instrument can spot
hairline differences**

**Based on theory that any color has
3 components, it reduces difference from standard to 3 numbers**



"Tinker Toy" model visualizes "color solid"

PROBLEM: When the housewife experiments to find just the right color for the living room wall, she often has much deliberating to do. But her problem is never half so grave as that of the manufacturer who supplied her with the paint.

Leading paint firm Sherwin-Williams, for example, has fifteen plants spread across the country making paints and colors which must match. Some rough and ready paints (for barns, roofs, steel structures, etc) can simply be "red" or "black" and need not be matched exactly. But when both Detroit and Cleveland plants ship a color like "peach" to outlets in Toledo, neither the housewife nor the artist had better "see" any color difference between the two batches.

Solution: Until fairly recently the judgment of about a dozen experienced people was used, in some cases, to determine whether a batch of paint looked the same as a standard. Their disagreement over whether two colors matched and how they failed to match is proverbial in the paint industry. This meant that by cut

and try methods colors would be added, the batch rebled, and re-examined until all or most of the test panel could agree. Frequently it was a matter of days before agreement could be reached. And, worse still, there was always the danger that an occasional batch might slip through without matching a standard color.

With the recent advent of specialized instruments in the plant, Sherwin-Williams investigated using a spectrophotometer for analyzing paint color. This type of instrument sees the entire spectrum and presents a graph showing color intensity throughout the entire visible (and portions of the invisible) range. While this type of reading should provide the information needed, the results were very complicated to work with and readings outside the visual range tended to be confusing.

In January of 1952 the Cleveland plant of Sherwin-Williams installed a Gardner-Hunter Color Difference Meter. This instrument operates on the basis that any color can be described by its three components: black-white, red-green, and yellow-blue. The blackness or whiteness of the color is called its R_d value and is represented by the vertical axis of a hypothetical color solid. Red and green are opposite extremes of a horizontal axis (a-axis) and yellow and blue are the extremes of a second horizontal axis (b-axis) at right angles to the a-axis. Color laboratory personnel at Sher-

Run	Date	Time					
		L	a	b			
		Light-	Red-	Green-	Yellow-	Blue-	
		ness	ness	ness	ness	ness	
Standard	74.0	8.7	16.1				
Batch	74.0	9.8	16.8				
Difference	7	1.1	.7				
Remarks							By

This form is used in noting results as color of a batch is brought to that of standard. Total color difference (ΔE) of 1.3 will be reduced to 0.3 before paint is shipped

win-Williams have made a "Tinker Toy" model of this "color solid" to help visualize just where any given color would fall.

Color difference meter is essentially a system for reading reflected light through filters to obtain three numbers which correspond to the color's position on the given axes. Power supply for the instrument is 6.3 volts AC supplied by a constant voltage transformer. This is used to light a small bulb such as is used in headlights.

Readings are first made on a standard color. Since all plants have copies of the standard it serves as a reference and compensates for any differences in individual instruments at the plants. Reading is then made on color under test. In a typical first test of a batch (results shown in illustration) lightness-darkness was found to match exactly at 74. Batch was found to be more red than standard (9.8 compared with 8.7 standard) and some-

(Continued on next page)

B&W's CROLOY 16-13-3

was born in
1934...

1953

LOOK AT OUR
LITTLE GUY NOW

Corrosion-resistant
Oxidation-resistant
Strength at Elevated Temperatures

Back in 1934 B&W successfully produced seamless 16 per cent chromium, 13 per cent nickel, 3 per cent molybdenum (B&W CROLOY 16-13-3) ... and, as a result of continuing research, in 1947 produced the first Type 316 columbium-stabilized chromium-nickel-molybdenum alloy tubing (CROLOY 16-13-3Cb), useful for field welding. Today CROLOY 16-13-3 finds wide use as a corrosion-resisting alloy in the chemical field.

It handles successfully the hot sulphite liquors and bleaches in pulp and paper industries, and resists corrosive action of many mineral and organic acids in rayon manufacture and in textile dyes. CROLOY 16-13-3 resists photographic chemicals and acquires itself splendidly against the pitting type of

attack caused by acid solutions containing small amounts of chlorides. It is less susceptible toward pitting in sea water than many other grades of stainless. In fact, where strength at elevated temperatures or extreme corrosion-resistant properties are required, you'll find one of the CROLOY 16-13-3 family on the job.

In addition to these two tubing steels, two other modifications of the basic steel have been produced. CROLOY 16-13-3ELC, a low carbon (.03 max.) grade, is especially suitable for field welding and CROLOY 18-13-3, with higher chromium and molybdenum, is particularly resistant to pitting and wedge or contact corrosion in saline solutions.



THE BABCOCK & WILCOX COMPANY TUBULAR PRODUCTS DIVISION

Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing



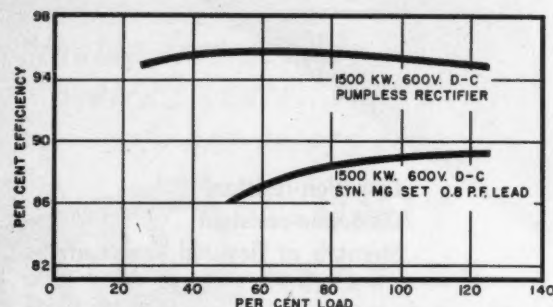
TA-1753 (M)

When inquiring check CP 2213 on handy form, pgs. 2-3

New G-E PUMPLESS rectifiers... today's answer for d-c power needs

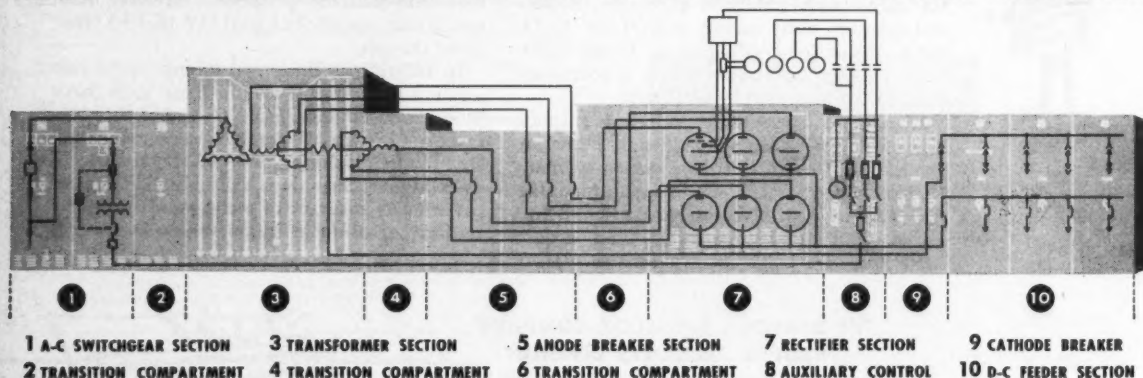


EVERY IGNITRON TANK after assembly is enclosed in a helium-filled bag—part of a rigid leak test prior to shipment.



EFFICIENCY CURVES for 600-volt d-c pumpless rectifier and corresponding MG set—show main reason you'll pay a smaller power bill.

HERE'S WHAT YOU GET WHEN YOU BUY A G-E PUMPLESS RECTIFIER SUBSTATION



GENERAL  ELECTRIC

When inquiring check CP 2214 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

(Continued from preceding page)

what more yellow (16.8 compared with 16.1). Differences were taken and vector addition made to show the total deviation of the color was 1.31 National Bureau of Standards units. In this case the shader would add yellow and white to the batch and repeat the test. This "peach" color would eventually be brought down to less than 0.3 color units difference from the standard before shipment.

Metameric Pairs

A metameric pair of colors is a pair apparently the same color. But, under different lights they actually change their shade. A pair of metameric greens A and B, for example, may have these properties: under yellow light A is bright and B is dark and muddy. Under blue-white light A is dark and "dirty" and B looks like a bright, vivid green. A feature of this color difference instrument is that it sees a pair like this just as the human eye sees it. While the difference meter offers no easy way out, it does at least confirm the confusion which may result when two such colors are to be matched. Furthermore, the meter takes into account the finishes (glossy or matte) just as the eye does.

Results: While it is difficult to estimate savings directly effected by this instrument, it has: cut the number of people involved in determining color matches from about a dozen to two, the "shader" and the "tester"; increased tank turnover — in one line of paint, days in the tank were cut considerably by this test method through reduction of the confusion and disputes about color matches. As a matter of fact, experienced shadders first viewed the new instrument with a good deal of skepticism, but they are now convinced of its value. Its role as an impartial referee has won it friends in the plant. Because of its success, the instrument is now being used for checking color changes of panels under test also. Its value here is obvious, remembering exactly what a color looked like two months ago is an impossible task for the human.

(Gardner-Hunter Color Difference Meter is a development of Gardner Laboratories, Inc., Dept. CP, 4723 Elm St., Bethesda 14, Md. . . . or for more information check CP 2215 on handy form, pages 2 and 3.)

22,000,000 lb Sugar

(Continued from page 9)

Results: Millions of pounds of sugar can now be stored in bulk without caking or lumping. Thus, all packaging can be handled on convenient, economical schedules to meet current orders rather than immediately after refining. Packaging operations are achieved without encountering extreme peaks in volume to be handled. Need to temporarily enlarge packaging crews is eliminated. Under controlled atmosphere, automatic weighing

NEW SOLUTIONS of processing problems

and packaging machinery operate more efficiently and are more easily maintained.

(Detailed design and construction of these sugar storage facilities were engineered by MacDonald Engineering Company, Department CP, 188 West Randolph Street, Chicago, Illinois . . . check CP 2216 on handy Reader Service slip, pages 2 and 3.)

X-ray vision spots underfilled cans, trips air blast which knocks them out of packing line . . .

X-ray & cadmium sulfide crystal can team up to "inspect" all sorts of packages

Inspecting canned beer is more arduous than many similar canning inspections. In addition to problem of keeping cans from being underfilled, brewers are faced with problems of excessive pressure if cans are overfilled with beer so that not enough space is left for gas.

X-ray inspection unit in use in a Milwaukee brewery is now inspecting 900 containers a minute and maintaining their contents to an accuracy of 30 drops of

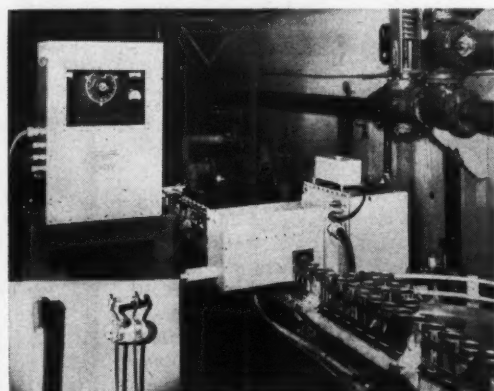


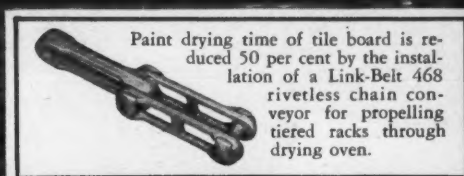
Photo shows unit installed at a brewery. Inset (lower left) compares cadmium sulfide crystal with ordinary match head to indicate size.

beer (or $\pm 1/64$ th inch of level). Unit can also be adapted to inspecting products packed in cartons. It operates with most common liquids and solids.

System consists of an 80,000 volt X-ray machine which shoots a beam from one side of canning line to the other where a cadmium sulfide crystal is mounted. Ordinarily, cadmium sulfide is a poor conductor of electricity, but when level in containers is low enough that X-rays pass over contents to hit crystal directly, it changes to a very good conductor. In the beer canning operation, when this extra jolt of X-ray is received from tube, it trips an automatic air blast unit which blows any faulty containers off the line.

Not only has this device spotted low fill cans, but has also indicated leaky cans where level has changed. It can also be adapted to checking for overfill.

(X-ray Level Control Device is a development of General Electric Co., Dept. CP, 4855 Electric Ave., Milwaukee 1, Wis.)



Paint drying time of tile board is reduced 50 per cent by the installation of a Link-Belt 468 rivetless chain conveyor for propelling tiered racks through drying oven.

What is the right chain for your drive or conveying job?

Typical chains from the complete LINK-BELT line



Class SS bushed roller chain with offset sidebars—for heavy drive service at moderate speeds.



Class C combination chain—popular, durable, low cost design for elevators, conveyors.



Class SS bushed roller chain with straight sidebars—for practically any conveying or elevating service.



Class 800 ley bushed chain—for heavy duty, severely abrasive conveying and elevating.

You'll find the answer in LINK-BELT's complete chain line... a size and type for every need

WHETHER it's a high-hp, heavy-impact drive or relatively slow-speed conveying service—you can get the *one* chain that best meets your needs from Link-Belt's complete chain line. Our engineers will be glad to work with you—help you select the right chain for your requirements. And you can be sure that any Link-Belt chain you buy is quality-built for longer life.

LINK-BELT

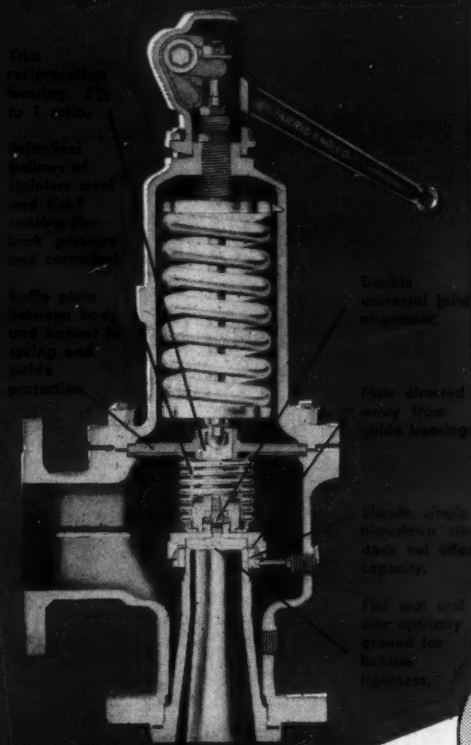
CHAINS AND SPROCKETS

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities.

13,209-C

When inquiring check CP 2217 on handy form, pgs. 2-3

for economical **positive* safety...**



BalanSeal and FarriSeal Safety-Relief Valves

(Pat'd & Pat. Pending)

Eliminate all risk of failure—failure that might cost lives or severe damage to equipment. Rely on the only safety-relief valves guaranteed to provide positive protection, 100% of the time, under all operating conditions. Farris safety-relief valves *can't* stick, plug or corrode because the critical working parts are completely isolated from the lading fluid—and they're unaffected by back pressures in the discharge manifold. These unique valves are more economical, too, because they permit higher downstream pressure with smaller discharge piping. In many installations this saving in piping costs amounts to as much as 15 times the cost of the valves. *You can't go wrong with BalanSeal or FarriSeal Valves because they can't go wrong!*

Technical manual, 51B, a treatment on Back Pressure Piping and Surge characteristics and 76-page catalog is yours for the asking.

* ASME-N.B. APPROVED
(Certified for Capacity)



Representatives in
all Principal Cities

505 Commercial Avenue
PALISADES PARK, NEW JERSEY

Affiliates: Farris Flexible Valve Corp. • Farris Stacon Corp. • Farris HydroTorque Corp. • Farris HydroSeal Corp.

When inquiring check CP 2218 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

Infrared spots afterburning in catalyst regeneration, piles up savings...

monitors CO in catalyst regenerator to prevent overheating and destruction

Problem: Catalyst regenerators for fluid catalytic cracking operations are designed to be run in a narrow zone of conditions. Maintaining these conditions is tricky, and if they are not maintained efficiency of regeneration can fall off resulting in poor production, or worse, turn the regenerator into a full fledged furnace and actually destroy the structure with high temperature.

When catalyst is used for hard cracking (typical in production of gasoline) carbon coating must be burned off to CO. But, if reaction proceeds from there to produce CO₂, temperature will rise, catalyst will deteriorate, and real trouble can result from this condition.

Solution: About five years ago, engineers in a large eastern refinery sought to study afterburning by means of analyzing flue-gas. Carbon monoxide was selected as gas compound to be measured, since primary objective of fluid cat cracker regenerator is to burn carbon to carbon monoxide.

Measurement of CO content in flue-gas would indicate how well this was being carried out. Furthermore, CO content of flue-gas is an excellent indicator of afterburning and could provide almost immediate warning of this condition.

To capitalize on speed of warning, decision was made to use an infrared analyzer rather than conventional flue-gas analyzer. Instrument selected can respond to 90% of a change in 10 seconds. Measurement is a voltage difference produced by two thermopiles. One produces voltage proportional to measured gas plus minor variations in system. Second thermopile produces voltage which corresponds to minor variations only. Difference between these is caused by gas to be measured. Signal is fed to Speedomax instrument which directly indicates and records percentage concentration of the CO.



This analyzing unit produces electrical signal which is fed to recorder

When CO analyzer was first installed, a period was allowed when operating procedures were not changed. It was then that operators learned that seven minutes after they noted a distinct and sharp drop in CO content, they could expect temperature rise from afterburning. Supplementary oxygen recorder (standard equipment) was then found to produce a slight signal about four minutes after CO drop was recorded.

Results: Operators then began to use CO analyzer as an afterburn indicator and found that afterburn could be quenched almost immediately by injecting water in upper regions of the regenerator. Considerable advantage afforded by this scheme was that afterburn could be stopped so fast that virtually no production was lost. When

Remember
the trade marks "tt" and
"TUBE-TURN" are applicable
only to products of
TUBE TURNS, INC.

tt
TUBE-TURN
TRADE MARK

Engineered FOR ACCURATE FIT-UP

THIS TUBE-TURN Welding Return is engineered for shape, size and wall thickness to simplify piping installation. It is forged by the only process that produces a wall as uniform in thickness and true in circularity as the original seamless pipe. This assures accurate fit-up and perfect alignment . . . whether it is used as a full 180° return or cut to any odd angle.

When you specify TUBE-TURN Welding Fittings and Flanges, you are *sure* of getting the ultimate in piping simplicity, safety and permanently leakproof construction. Your nearby TUBE TURNS' Distributor is at your service!

The Leading Manufacturer of Welding Fittings and Flanges

TUBE TURNS, INC. LOUISVILLE 1,
KENTUCKY

DISTRICT OFFICES: New York • Philadelphia • Pittsburgh • Chicago • Houston • Tulsa • San Francisco • Los Angeles • Denver • Atlanta

Subsidiaries: TUBE TURNS OF CANADA LIMITED, CHATHAM, ONTARIO • PENNSYLVANIA FORGE CORPORATION, PHILADELPHIA, PA.



HERE'S SERVICE

TUBE TURNS' Engineering Service

HELPS IMPROVE A DRYER DESIGN



C. B. McLaughlin, manager of TUBE TURNS' Engineering Service Division has been working with designers and piping men in the field for years. He and his men are at your service.

WHERE PIPING is a component of plant equipment, more and more designers are using TUBE-TURN Welding Fittings for directional changes. Results: greater design flexibility, reduced maintenance, less weight and space, improved operation. An example is the veneer dryer shown . . . a product of Coe Manufacturing Company, Painesville, Ohio. Progressive engineers of Coe, with the help of TUBE TURNS' Engineering Service Division, converted the heater from screwed connections to welded construction. Each of its banks of 1-inch pipes is joined by 180° TUBE-TURN Welding Returns. The coils carry steam at 200 psi pressure and 388°F. Joints are now permanently leakproof.

TUBE TURNS' Engineering Service is available to help in *your* piping problems.



YOUR DISTRIBUTOR of TUBE-TURN Welding Fittings and Flanges can serve you promptly. He is backed up by the entire TUBE TURNS' organization.

Want Materials Data?

Tube Turns, Inc. has prepared a booklet listing properties and specifications of pipe and fitting materials—carbon steels and wrought iron, stainless steels, nickel and nickel alloys, etc. For a free copy, just send this coupon.



TUBE TURNS, INC., Dept. KK-7
224 East Broadway • Louisville 1, Kentucky

Your name

Position

Company

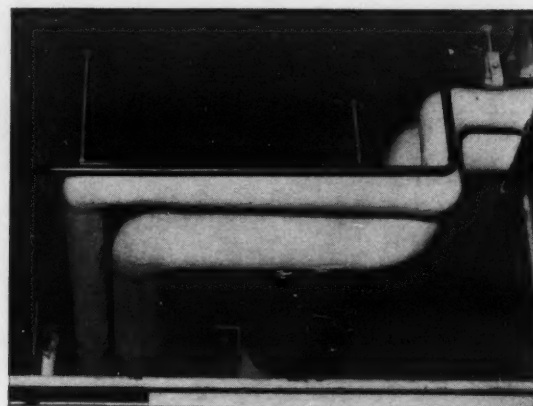
Nature of business

Address

City State



Coe Veneer Dryer. Welded coils with TUBE-TURN Welding Returns are compact and permanently tight.



AT UPJOHN, Kalamazoo, Mich. Directional changes in piping are made with TUBE-TURN Welding Fittings. Many lines are stainless steel to guard purity in processing.



DISTRICT OFFICES

New York	Tulsa
Philadelphia	San Francisco
Pittsburgh	Los Angeles
Chicago	Atlanta
Houston	Denver

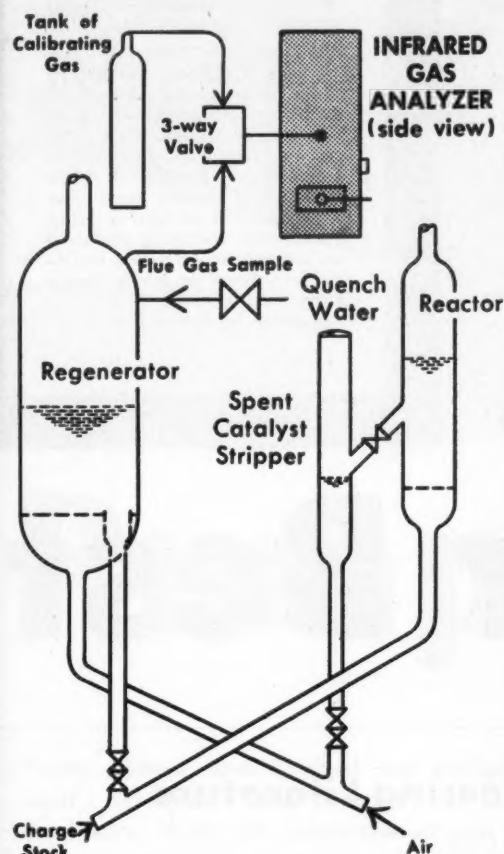
*"T" and "TUBE-TURN" Reg. U.S. Pat. Off.

TUBE TURNS, INC.
LOUISVILLE 1, KENTUCKY

NEW SOLUTIONS of processing problems

operators relied on temperature and oxygen readings alone, afterburn was so well established when water sprays were used that production fell off for some time.

Tests over a period of several more months revealed that maximum carbon-burning rate was obtained when oxygen content in flue-gas was



Schematic shows where infrared analyzer was tied into catalyst regenerating system

raised from 0.5% to about 1.5 to 2%. Use of CO analyzer was important in establishing these more favorable conditions.

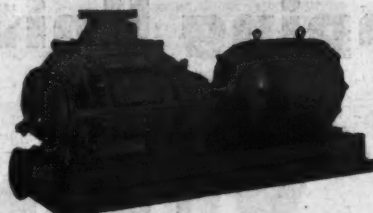
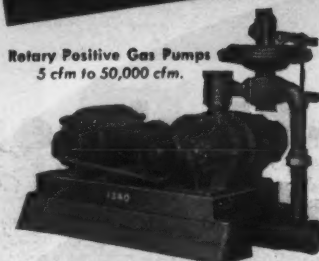
In addition, regenerator has shown increased conversion rate, increased catalyst life, and increased efficiency of operation with more carbon burned per unit volume of air consumed.

(Infrared analyzer is a product of Leeds & Northrup Co., Dept. CP, 4901 Stenton Ave., Philadelphia 44, Pa. . . or for more information check CP 2219 on convenient Reader Service slip between pages two and three.)

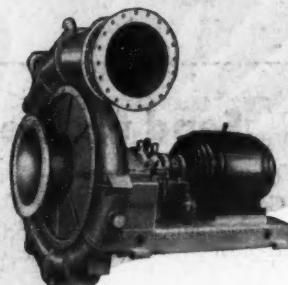
For more information on product at left, specify CP 2220 . . . see information request blank between pages 2 and 3.

Specialists IN GAS HANDLING HELP REDUCE EXPLOSION HAZARDS

Rotary Positive Gas Pumps
5 cfm to 50,000 cfm.

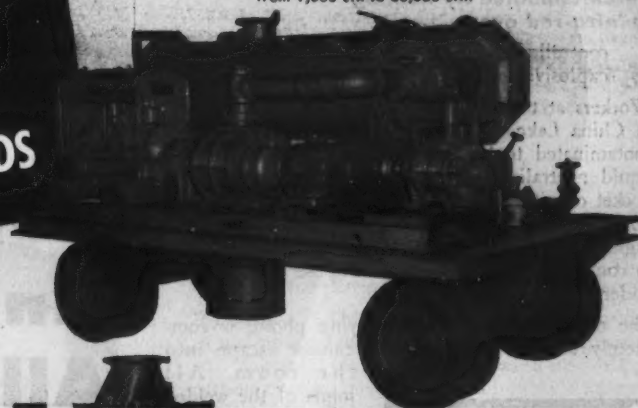


Cycloidal Vacuum Pumps—Single or 2-stage,
from 500 cfm to 13,000 cfm, at vacuums up to 27" Hg.



Centrifugal Blowers and Exhausters
Single and multi-stage, from 2,000 cfm
to 100,000 cfm or higher.

Inert Gas Generators
Portable or stationary,
from 1,000 cfh to 35,000 cfh.



Rotary Positive
Displacement Meters
4,000 cfh to 1,000,000 cfh.



Rotary Positive Blowers and Exhausters
5 cfm to 50,000 cfm.

If your operations involve materials or processes which might cause an explosion-produced fire, it's just good business to protect yourself with R-C Inert Gas Generators. Often, the small cost can be offset by reduction of insurance costs.

One reason why R-C Inert Gas Generators are so widely accepted is that they are products of almost a century of experience in handling gas or air. This background enables us to build simple, compact units with high reliability and low operating cost. Portable or stationary types provide characteristics to match specific requirements.

These same qualities of dependability and economy prevail throughout our entire line of equipment to handle gas or air. We are specialists in that business. Further, we build both Centrifugal and Rotary Positive units. This exclusive R-C dual-ability line offers the only dual choice in the industry, with wide ranges in capacities and types to meet closely the demands of any specific operation or process.

We suggest that you consult the "specialists" when you have a need for explosion protection, or on your problems of moving gas or air.

ROOTS-CONNSVILLE

*Exclusive Specialists in
Handling Gas and Air*



ROOTS-CONNSVILLE BLOWER

A DIVISION OF DRESSER INDUSTRIES, INC.
537 Richmond Ave. • Connorsville, Indiana

When inquiring check CP 2221 on handy form, pgs. 2-3

**Nitroglycerine-soaked tools
decontaminated by heating
in infra-red oven . . .**

controlled-heat cycle in special unit drives off all explosive so equipment is safe to handle

Workers at the U. S. Naval Ordnance Test Station in China Lake, Calif., used to clean nitroglycerine-contaminated tools and equipment by solvents and liquid neutralizing agents. But an explosion of a pocket of nitroglycerine left after such decontamination indicated that a more-positive method would be highly desirable. They now use an infra-red oven to completely vaporize and decompose the explosive under controlled heating.

The oven, shown in accompanying photo, is completely sealed so that fumes cannot escape into the room. All joints of the welded aluminum interior are ground smooth so that vapors will not collect in them. Oven temperatures are automatically controlled (and recorded); if temperature exceeds 575°F, power shuts off and visible and audible warnings are given. As an additional safety measure, door latch cannot be opened until temperature in oven has dropped to 130°F — after the heating cycle.



Interior of radiant heat oven for removing nitroglycerine from contaminated tools and equipment

The Corona-Merco infra-red Pyrex tubes transmit energy so efficiently that they remain relatively cool during operation. Tight glass-to-metal seals are used on the tube ends, but the heaters or connections are said not to be damaged by the thermal expansion and contraction of the oven walls. The reflectors are adjustable around the axis of the tube, and can be removed for cleaning without disturbing the tube. A removable shield of expanded aluminum, over the face of the reflector, protects the tube from accidental breakage.

Circulation within the 36 by 36 by 60" oven is provided by two 12" fans, driven from the outside. The drive shaft is conducted through sealed spindles in the oven ceiling. Oven door has a Silastic seal which adheres to a formed contour in the face of the door frame.

Load to be contaminated is placed on a dolly and wheeled into the oven on tracks. Door is locked, desired temperature is set on recorder-controller, desired time cycle is set on timer, and starting button is pushed.

During the heating cycle, the forward six-inch vent of oven is closed automatically by damper, and fumes pass out aft 6" vent. Upon completion of heating cycle, the forward vent is opened to speed exhaust and cooling.

**PROCESS
PUMPS**

**Here's Why
An
Allis-Chalmers
Complete
Pumping Unit Is**

Your Best

Allis-Chalmers Type APKK explosion-proof motor. Fin-type design with no enclosed passages for external cooling air. Cannot clog and overheat. If cleaning is required, it takes only a few minutes with cloth, brush, vacuum or air hose. All cast-iron frame resists corrosion. Similar design available in totally-enclosed, fan-cooled motors for non-hazardous locations.

Allis-Chalmers oil-lubricated, frame-type pump. Will handle many process jobs at less cost than usual refinery pump. Available with capacities to 1200 gpm, heads to 250 feet and temperature range to 550 F. Built with wide choice of materials to handle many types of corrosive liquids. Can be provided with six different sealing arrangements, including mechanical seal and water-cooled stuffing box. As you can see from the picture, there is plenty of room between the pump and the bearing for maintenance.

Send for Free Engineering Literature

Motors

- | | |
|---|---------|
| <input type="checkbox"/> Handy Guide to Motor Selection | 51B6052 |
| <input type="checkbox"/> Explosion-proof Motors (APZZ) | 51B7286 |
| <input type="checkbox"/> Explosion-proof Motors (AZZ) | 51B7149 |

Pumps

- | | |
|---|---------|
| <input type="checkbox"/> Handy Guide to Pump Selection | 52B6059 |
| <input type="checkbox"/> Oil-Lubricated, Frame-type Pumps | 52B7638 |

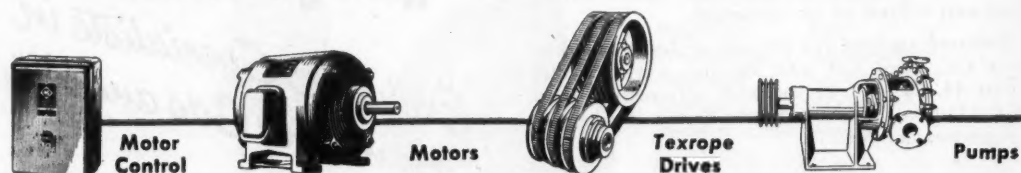
Control

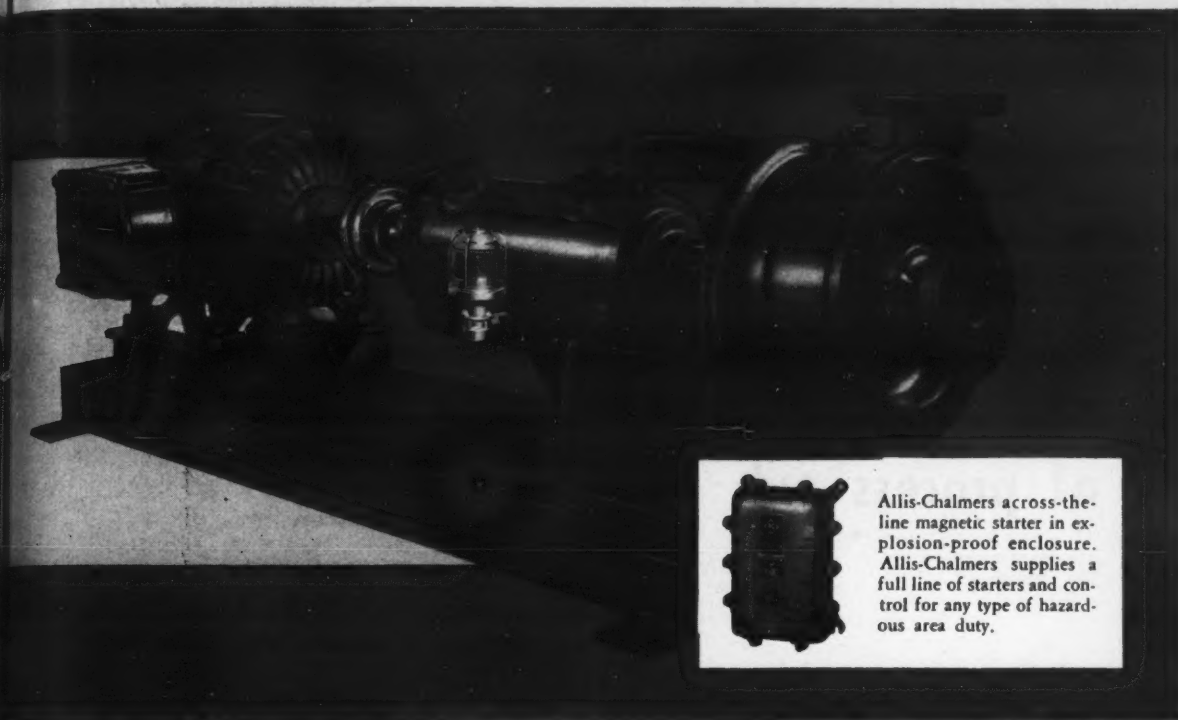
- | | |
|---|---------|
| <input type="checkbox"/> Handy Guide to Starters | 14B7733 |
| <input type="checkbox"/> Reduced Voltage Starters | 14B7215 |

Texrope Drives

- | | |
|--|---------|
| <input type="checkbox"/> Handy Guide to Texrope Drives | 20B6051 |
|--|---------|

COMPLETE SERVICE from power line to machine





Allis-Chalmers across-the-line magnetic starter in explosion-proof enclosure. Allis-Chalmers supplies a full line of starters and control for any type of hazardous area duty.

Pump Buy

Pump, Motor and Control are designed, built, assembled and tested by Allis-Chalmers. With this ready-to-run unit you save engineering time . . . installation costs . . . service problems.

YOU CAN SAVE the time and expense of engineering a pumping unit from several manufacturers' catalogs. Allis-Chalmers will supply the complete pumping unit, with all parts of coordinated design and manufacture, ready to install and run. This engineering service costs you nothing extra.

No Service Problems

The complete unit is guaranteed by one reliable manufacturer, Allis-Chalmers. No buck passing on performance responsibility. Nearly a hundred Allis-Chalmers Certified Service Shops provide factory-approved service in every large industrial area.

Get Complete Information

Get help on your pumping problems by calling an experienced Allis-Chalmers pump application engineer at your nearby Allis-Chalmers District Office.

Texrope is an Allis-Chalmers trademark.

A-3974

ALLIS-CHALMERS

MILWAUKEE 1, WISCONSIN



When inquiring check CP 2222 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

After temperature reaches 130°F, door is opened, which causes fans to stop running.

(Oven was designed and constructed by Corona Manufacturing Corp., Dept. CP, 5210 San Fernando Rd., Glendale 3, Calif. . . . or for more information check CP 2223 on handy form, pages 2 and 3.)

Coated paper is better since tension control stepped in . . .

hydraulic unit drives wind-up roll of machine used for putting carbon ink on kraft paper

Problem: The simple but unsatisfactory device of a slipping belt and water-cooled pulley was used to "control" tension on the wind-up roll of a carbon coating machine at Columbia Ribbon and Carbon Manufacturing Company, Inc., Glen Cove, Long Island, N. Y. The power for the wind-up roll was taken from another shaft of the machine.

This machine coats kraft paper with carbon ink. It winds 8-lb paper, ranging from 34 to 60" wide, at an average speed of 200 fpm. Diameter of the roll increases from 3 to 24" during winding.

Solution:

A 7.4" Hydro-Wynd is now being used to maintain constant tension on the wind-up roll. As shown in photo, the unit is part of a drive arrangement which consists of a 3-hp, 1160-rpm motor, two B section V-belts, and a Hi-Lo variable-pitch pulley. A ratio of about 4 to 1 is provided between the Hydro-Wynd and the reel drive.



Drive of wind-up roll holds constant tension because of Hydro-Wynd (straight back from motor)

The Hydro-Wynd is made up of a hydraulic coupling on

the input end and a planetary gear set on the output end. The ring gear is fixed to the impeller (or pump) of the coupling. Planet gear carrier is fixed to the turbine (or runner) of the coupling, and the sun gear is integral with the output shaft. The automatic "slip" of the coupling reacts with the planetary gear set to provide increased torque, necessary to maintain desired tension while the roll rpm decreases and roll diameter increases.

Results: Tension is held within satisfactory limits from starting to finished roll diameter, meaning increased quality of product. The only time it is necessary to vary the input speed of the Hydro-Wynd is when the width of the paper being processed is changed.

(The Hydro-Wynd is made by Twin Disc Clutch Company, Hydraulic Division, Dept. CP, Rockford, Ill. . . . or for more information check CP 2224 on handy form, pages 2 and 3.)

Easier ELASTOMER compounding, enhanced cured physicals point to utility versatility of process aid

**Aids rubber processing,
enhances properties
of end products**

Production time is reduced and processing temperatures are lowered by the utilization of a multi-purpose rubber fortifier and extender called Fortex. It is also said to impart desirable properties to the finished rubber product.

Actually, Fortex is a plasticizer and anti-cross-linking agent. Production experience has indicated that it should be added directly to the rubber early in the breakdown or at the start of milling to gain maximum benefits. It is not volatile, and does not

**Fortifier and extender has the ability
to replace the functions of some ma-
terials and to improve the functions
of other materials**

The January 1953 issue of *CHEMICAL PROCESSING* (page 27) carried a brief announcement of a new processing aid for rubber and other elastomers — Fortex. Since that time additional information has been compiled, and the Editors believe that an extended editorial on this product is justified, owing to its unusual utility and versatility.

What It Is

BY WAY of reiteration, Fortex is a useful processing aid for natural, GR-S, neoprene, nitrile, and reclaimed rubbers. Chemically, it is of vegetable origin — a mixture of hydrophenanthrenic and other vegetable acids chemically treated to block unsaturation. Physically, it is a viscous, brown liquid which pours and handles easily when warmed to 140-160°F. It imparts no odor to either uncured or cured stocks, and is reported to be non-toxic. It neither bleeds, blooms, nor stains, and can be

used in light-colored or even white stocks. Specific gravity is 1.04, pounds per gallon 8.72, and it is soluble in most organic solvents.

No use has yet been found for Fortex in butyl rubbers, and it is incompatible with the polysulfide group of rubbers.

What It Does

Fortex takes its name from "fort" for fortifier and "ex" for extender. Its principal characteristic is its ability to develop a superior cohesive bond with elastomers. Elastomers absorb the aid at a surprisingly fast rate, strikingly evidenced, for example, by the relatively short time required to add 10% of the material to a nery nitrile rubber on a laboratory roll-mill.

Maximum processing advantages to be derived from Fortex are in Banbury *premastication* — addition of the breakdown aid to the elastomer prior to any other ingredient. The relatively rapid rate at which the aid incorporates in elastomers fully justifies this, whereas, plasticizer-premastication cannot be commonly practiced because of the relatively slow rate

of incorporation, resulting in prohibitive mixing time with other plasticizers.

It has been shown that mixing time of stocks where Fortex was used in premastication was equal to or slightly less than where premastication was not practiced. Premastication on open mills with Fortex is impractical because stock tends to break away from the nip of rolls. The greater shear action of roll-mill mixing does not give premastication the importance here that it has in Banbury mixing.

Rubbers broken down with 5-7% Fortex may be used as 100% new elastomer, pointing up the extending value, without loss in physicals. GR-S broken down with 5-7% Fortex is effectively inhibited against cross linking, thus costly peptizers can be entirely eliminated.

Fortex is not intended to take the place of tackifier, lubricant, or a low temperature plasticizer, nor is it intended to completely replace low-cost oils, but it very definitely seems to enhance the functioning of these materials. For example, some oils that are difficult to incorporate with tough elastomers, can be readily incorporated by using Fortex.

FORMULAS

	A	B	C	D
Smoke Sheets	100	100	97	90.91
FORTEX	—	—	3	9.09
Light Processing Oil	—	3	—	—
E.P.C. Black	10	10	10	10
Zinc Oxide	5	5	5	5
Stearic Acid	1	1	1	1
MBTS	1	1	1	1
Sulfur	3	3	3	3

Minutes Cure
at 40 Pounds

HARDNESS

	A	B	C	D
15	35	37	39	45
30	43	41	47	53
45	43	42	49	55
60	44	43	50	58

200% MODULUS

	A	B	C	D
15	90	90	100	140
30	150	140	200	260
45	160	170	300	375
60	150	175	300	430

400% MODULUS

	A	B	C	D
15	300	387	260	340
30	390	560	675	675
45	625	635	930	775
60	690	610	975	1200

TENSILE STRENGTH

	A	B	C	D
15	1700	2165	2000	2400
30	2810	2255	3800	4000
45	2375	2350	3930	4060
60	2750	2390	3750	3850

PERCENT ELONGATION

	A	B	C	D
15	700	695	810	760
30	730	660	700	710
45	650	640	650	680
60	660	650	620	590

More on What It Does

Fortex can be colloiddally dispersed in many extremely tough and nervy materials such as high styrene resins, Neoprene S, and chlorosulfonated polyethylene. These preparations disperse readily in other elastomers and suggest the possibility of prepared toughening agents for easy incorporation in stocks.

There is a definite reinforcing effect resulting from the use of Fortex. While the viscosity of elastomers is reduced by Fortex as plasticizers generally do, it is still held at a relatively high level. Thus, the shear action of the elastomer, which is important to dispersion of pigments in Banbury mixing, is also maintained at a relatively high level.

Noticeably improved "length" and "smoothness" of stocks in calendaring and tubing is evidence of the cohesive effect of Fortex on the elastomer and high degree of pigment dispersion.

Fortex is acidic and produces soluble zinc for activation, thus stearic acid may be reduced or eliminated from its stocks. This is advantageous where

(Continued on next page)

Take a NEW LOOK at EPICHLOROHYDRIN

WHEN SOMETHING has been around for a while, like Epichlorohydrin, it's apt to be taken for granted. If you're working with this product, you know what it can do for you; but if, after a first look, you found no immediate use for Epichlorohydrin, you may never have thought about it since. If so—Take a new look at Epichlorohydrin!

Many new applications have been developed for it—so many, in fact, that Shell Chemical has just built

another plant to increase the supply.

What is Epichlorohydrin doing today? It's a *practical intermediate* in the manufacture of adhesives, dyestuffs, solvents, plasticizers, cosmetics and resins for surface coatings. It's a *successful stabilizer* in the formulation of industrial chlorinated compounds and chlorinated insecticides. It's *being actively explored* for use in fumigants, surface-active agents, humectants, detergents, and ion-exchange resins.

Just send the coupon, clipped to your letterhead, for a book that has been prepared specially to answer your questions about "Epi".

SHELL CHEMICAL CORPORATION (CP)
50 West 50th Street, New York 20, N. Y.
Attention: Department A

Please send me the 56-page book SC:49-35
"Epichlorohydrin."

Name _____

Title _____

Address _____

City _____ State _____

SHELL CHEMICAL CORPORATION

CHEMICAL PARTNER OF INDUSTRY AND AGRICULTURE

EASTERN DIVISION: 500 Fifth Avenue, New York 36 • WESTERN DIVISION: 100 Bush Street, San Francisco 6
Atlanta • Boston • Chicago • Cleveland • Detroit • Houston • Los Angeles • Newark • St. Louis
IN CANADA: Chemical Division, Shell Oil Company of Canada, Limited, Toronto • Montreal • Vancouver



When inquiring check CP 2225 on handy form, pgs. 2-3

Elastomer Compounding

(Continued from preceding page)

use of stearic acid tends to reduce necessary building tack — as in GR-S and nitrile rubber stocks.

Resilience in Fortex stocks varies with the type of test, but is usually higher. Higher hardness and modulus behavior results in higher heat build-ups, but blow out tests are said to be favorable.

The observed increases in hardness, modulus, and tensile strength are attributed to Fortex's higher cohesive bond with the elastomer, and to the resultant better dispersion and wetting of pigments. Elongations are usually lower but tear resistance is reported to be superior, even after aging.

Looking at Cured Physicals

Although the accompanying report (see tabulation) is academic, it does point up very strikingly the value of Fortex as an extender and reinforcer in natural rubber. Also suggested is the possibility of replacement of part of the pigment load with Fortex in instances where high hardness is required and where obtaining it by load alone results in a serious scorching tendency.

Channel black in these mixes is intentionally low to avoid resultant reinforcing effects, and to magnify the same for Fortex. Increases noted in hardness and modulus of the Fortex extended stocks (C & D) are outstanding, as also are the high tensile and elongation relationships.

Low tensiles in mixes A and B were verified but are not easily explained. They seem to be associated with a greater degree of breakdown of the smoked sheets not containing Fortex (A & B), and with the absence of an antioxidant to resist heat deterioration during cure. Fortex has demonstrated good age resistance in all elastomers.

(Fortex is a product of the Thermoid Chemical Company, Dept. CP, 200 Whitehead Road, Trenton 6, New Jersey . . . check CP 2226, pages 2 and 3.)

Activator for cold GR-S may save rubber makers \$700,000 annually . . .

it's a water solution that promotes uniformity of rubber and whole cold process

Production of GR-S cold synthetic rubber will be speeded up and a more uniform product will be obtained through the utilization of a new chemical activator (a sulfoxylate derivative). According to manufacturer, its use could result in an annual saving of \$700,000 for the synthetic rubber industry.

Activator contributes a more uniform product, and a more uniform process as a whole, because it is a water solution. There is said to be no variance in either quality or in process itself. This contrasts to earlier activators consisting of a precipitate of ferrous sulfate and potassium pyrophosphate. Here, the particle size, quality of cold rubber, and general process varied considerably.

The activator can be used in all recipes for cold latex as well as in recipes for solid cold rubber. It

for your information...

brief summaries of helpful product news

USE OF SYNTHETIC RESIN ADHESIVES RISES SHARPLY



In addition to their use as label adhesives for packages shown here, synthetic resins also are used in the manufacture of boxes, bags, books and shoes.

Synthetic resin-based adhesives are finding sharply increased usage by the packaging industry because of their superior properties, adaptability to high-speed machinery, stability and convenience. The resin being used in largest quantity is polyvinyl acetate.

Monsanto is a major supplier of plasticizers used in polyvinyl acetate to impart grease resistance, flexibility, required tackiness, stability and other desirable performance and processing properties. Other synthetic resins now being used in greater amounts by this industry, and for which Monsanto supplies plasticizers, are polyvinyl chloride, zein, casein, acrylates, polystyrene and the celluloses.

Because of the current interest

in these resins, Monsanto has recently issued a technical bulletin which makes available typical formulations of the major synthetic resin adhesives: emulsion, hot-melt, delayed-tack, solvent pressure-sensitive and adhesive primers or coatings.

The bulletin discusses the properties and uses of the various adhesive formulations, and includes a table which evaluates Monsanto plasticizers in polyvinyl acetate formulations. Three Monsanto plasticizers have been approved as nontoxic by the Bureau of Animal Industry and the Food and Drug Administration.

Synthetic resins are being used in the greatest quantity by the packaging industry as label adhe-

sives. Delayed-tack formulations permit bottle-labeling machinery to operate at the rate of 300 bottles per minute instead of 40 to 60 bottles per minute with other adhesives.

In addition to their use as label adhesives, the synthetic resin-based products are employed in the manufacture of packages, boxes and bags, as well as books and shoes.

For a copy of the bulletin, check the coupon.



New Bulletin Offered On Chlorosulfonic Acid

Useful information about the properties, reactions and applications of chlorosulfonic acid has been compiled in bulletin form by the Organic Chemicals Division of of Monsanto Chemical Company.

The 12-page bulletin reviews typical reactions of chlorosulfonic acid with inorganic and organic compounds.

Chlorosulfonic acid has advantages over sulfuric acid as a sulfating or sulfonating agent, the bulletin points out, because free hydrochloric acid gas is formed instead of water, thus avoiding the problem of spent acid. The evolution of hydrochloric acid gas is also an indication of reaction progress.

In addition to chemical and physical properties, the bulletin includes a section on proper storage and safe handling.

In this section there is a discussion of personal protective equipment, first aid treatment and other important topics.

To get your copy of this informative bulletin send in the coupon today.

Parathion Safety Poster Available from Monsanto

Monsanto's widely circulated poster on the safe handling of parathion is now available in Spanish or Portuguese translations, in addition to English, for use by formulators.

This poster, entitled "Handle Parathion Safely," is helpful to anyone who applies or handles Monsanto parathion. It is being offered as part of Monsanto's program of furthering and expanding the use of agricultural chemicals by encouraging safe handling practices.

For your copy of this helpful poster, send in the coupon today.



Bulletin Describes New Sterox AJ Wetting Agent

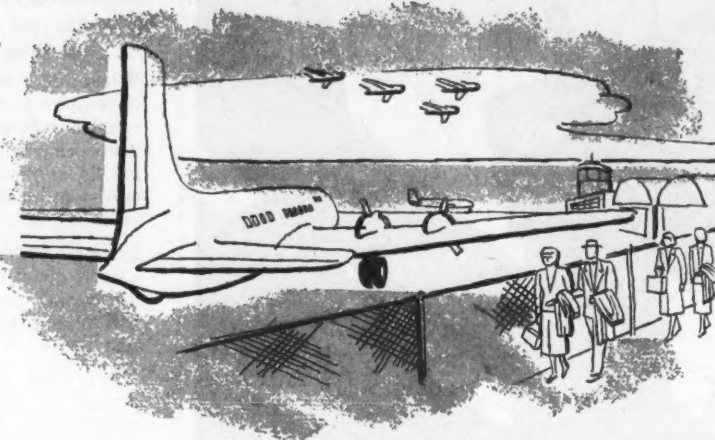
A new non-ionic surface-active agent with extremely high wetting and deterative properties is now available from Monsanto.

Called Sterox AJ, this new wetting agent possesses a faint, pleasing odor. It is chemically inert, stable and active over a wide range of conditions. This unusual stability coupled with superior surface-active properties makes Sterox AJ invaluable in a large number of applications.

Uses include laundering, paper rewetting, industrial cleaning compounds, detergent sanitizers, and textile processing.

A new bulletin, P-147, is available from Monsanto describing the composition, appearance, stability, wetting speed and other important chemical and physical properties.

ISOCYANATES — A NEW FIELD OF CHEMICAL TECHNOLOGY



To add strength without adding excessive weight, isocyanate foamed-in-place resins are used in ailerons and wing tips of aircraft.

Demonstrating its leadership and continuing expansion in the field of isocyanates, Monsanto has scheduled the construction of new multi-million-dollar production facilities.

From these facilities will come tons of isocyanates to augment Monsanto's present production which goes into such applications as intermediates, synthetic rubber, adhesives and foamed-in-place resins.

As intermediates Monsanto mono-isocyanates have been used with outstanding results. They are important tools in the production of dyestuffs, pharmaceuticals and herbicides.

Rubber is another field where isocyanates have proved their worth by helping to make a synthetic rubber that is more abrasion-resistant, tear-resistant and less susceptible to ozone attack.

Foamed-in-place resins are—at present—one of the major applications of isocyanates. These resins fill intricate space without the usual labor required to form shapes to fit each cavity and are self-adhering to the walls of the space filled.

Adhesives is a field showing great promise. Here Monsanto diisocyanates are being used to produce adhesives which give strong, durable bonds between glass and metal, aluminum and aluminum, ceramic and glass, and many others.



Sterox:
Reg. U. S.
Pat. Off.

.....

MONSANTO CHEMICAL COMPANY 7/53
1702 South Second Street, St. Louis 4, Missouri

Please send information on: ☐ Isocyanates

Please send: ☐ Bulletin P-147
☐ Technical Bulletin on Chlorosulfonic Acid
☐ Parathion Poster in..... Language
☐ Synthetic Resin Adhesive Bulletin

Name Title

Company

Street

City Zone State

.....

When inquiring check CP 2227 on handy form, pgs. 2-3

is reported to give the latex a better color and make it more fluid for easier handling. Laboratory tests indicate the rubber may have better aging characteristics than present types due to its low iron content.

An initial production of around 600,000 pounds of GR-S cold rubber with the new activator has been authorized by the Reconstruction Finance Corporation in two government-owned synthetic rubber plants. Rubber so produced will be designated as X-750, and will be a general process rubber usable wherever cold synthetic rubber is now being used... tires, mechanical goods, etc.

(Activator is a development of the Naugatuck Chemical Division of the United States Rubber Company, Rockefeller Plaza, 1230 Avenue of the Americas, New York 20, New York.)

Compares mechanical properties of several alloy steels

Complete with charts, tables, and photomicrographs, 18-page bulletin compares the mechanical properties of chromium-nickel-molybdenum (AISI 8660), the chromium-vanadium (AISI 6150), and the silico-manganese (AISI 9262) alloy steels used for fabrication of hot-formed springs with plain carbon spring steel (AISI 1095). Strength properties, ductility, notch sensitivity, hardenability, grain size, oxidation loss, decarburization, fatigue characteristics, and quality of the hot-rolled bar stock are considered.

When an alloy steel is desired for exacting spring service, this report concludes that the chromium-nickel-molybdenum steel should be employed.

Bul EZ-93/29 is issued by The International Nickel Co., Dept. CP, 67 Wall St., New York 5, N. Y. When inquiring specify CP 2228 on convenient Reader Service slip between pages 2 and 3.

Give specifications, uses for n-butyl acetate

Uses: n-Butyl acetate finds application in nitrocellulose lacquers... in other coatings, inks, and adhesives... as a dehydrating agent, since it forms an azeotrope with water... extraction and purification procedures... and many more.

Description: Maker's n-butyl acetate has the following set of specifications:

Purity, ester, % by wt.	90-92
Specific gravity, 20/20°C	0.874-0.877
Acidity as HAC, max %	0.01
Water (naphtha test)	none
Non-volatile matter, max, g/ml	0.005
Color, max, APHA	15
Distillation range, °C	118-128

(Product of the Commercial Solvents Corporation, Dept. CP, 260 Madison Avenue, New York 16, New York... or for more information check CP 2229 on convenient Reader Service slip between pages 2 and 3.)



Ship arriving from the Near East unloading licorice root at the MacAndrews & Forbes Company's Camden pier.

LICORICE is also a promising industrial product

All licorice extracts—including the secondary extract, Flotite—are active foam producers. Licorice-stabilized foams have a tough, durable bubble structure—a fact that might be of enormous importance to you!

Flotite has found wide application as a wetting, dispersing and foaming agent in various industrial products. Today it is being discovered, or rediscovered, by some of America's blue-chip corporations. Now, more than ever, Flotite is being used experimentally in the development of new products and the improvement of many in general use.

A similar interest is being shown in the primary licorice extracts. These are suitable as flavor modifiers in certain foods, and as flavor modifiers, plus foam producers, in beverages with relatively low acidity. In these fields, too, research is being stepped up.

Is this research justified? The tobacco industry says yes by using over 20,000,000 pounds of licorice yearly to improve the flavor of its products. Pharmacy says yes in finding licorice irreplaceable.

Do you have a problem that licorice or one of its derivatives might help you solve? Feel free to write us about it. We should like to supply working samples and more information. (For additional uses of licorice, refer to the column at your right.)

Some New or Potential Uses for Licorice And Licorice Derivatives

Flavor for ice cream • Antioxidant to keep chewing gum fresh • Prolonging foam in porter and ale • Soft drink flavor • Aging and mellowing smoking pipes • Improving meat and fish sauces • Therapeutic agent in treatment of Addison's disease • Component in feeds for horses, cattle and chickens • Soothing ingredient in cough syrups • Stabilizing acid latex • Flotation agent in ore separation



Write today for your free copies of "The Story of Licorice" and "Licorice: Dark Mystery of Industry." They'll be mailed promptly. You're sure to find them interesting, and you might find them profitable as well.



MACANDREWS & FORBES COMPANY

Licorice and Licorice Products • Since 1870

200 Fifth Avenue, New York 10, N.Y. Plant: Camden, New Jersey

When inquiring check CP 2230 on handy form, pgs. 2-3

MATERIALS

Stops gassing in paints containing fine metals . . .

silica gel adsorbs moisture, prevents hydrogen formation that ruptures sealed containers

Where only trace quantities of moisture may be present in paint formulations containing finely divided metals, especially aluminum, there is a better-than-even chance of reaction to produce hydrogen gas. Gas pressure developed in tightly sealed containers many times results in bulging of the lid or exudation of the paint.

Extensive tests and commercial usage have shown that a finely divided silica gel — Syloid Al-1 — eliminates the gassing problem. It removes water by physical adsorption before the reaction forming hydrogen can take place.

Where only trace quantities of moisture may be present in a formulation, the gel may be used at a concentration of 1% by weight of the paint (or approximately 3% by weight of aluminum pigment). The silica gel may be added through rapid stirring either in the final paint or during blending operations.

Where concentrations of moisture higher than 1% by weight of paint are known or suspected, then proportionately higher addition of the gel should be made. When used in aluminum paint to concentrations as high as 5%, Syloid Al-1 not only effectively removes the moisture, but also has no effect on leaf stability of the paint. There is, however, a tendency of the gel to retard drying rate of the paint as the concentration of the gel approaches 5%.

Other paints containing finely divided metals may require the gel for degassing protection. For example, gold pigmented paints can utilize 1.5% of the gel. Similarly, asphalt-aluminum paints can pick up moisture from filler materials and be subject to gassing. Degassing here can be accomplished by adding the gel at a rate of 6% based on weight of the aluminum pigment.

Following is a set of specifications for Syloid Al-1:

Moisture Adsorption	up to 40% by wt.
Silica Content (dry basis)	99.8%
Particle Size	0-20 micron
Color	white
Bulk Density	30-35 lb/cu ft
Particle Density	1.2
True Density (silica)	2.2

(Product of the Davison Chemical Corporation, Dept. CP, 101 N. Charles St., Baltimore 3, Maryland . . . or for more information check CP 2231 on handy form, pages 2 and 3.)

Three factual bulletins summarize data on paint driers, stabilizer

Developed to overcome plating difficulties encountered with barium-cadmium laurate-type stabilizers when these are used in high ratios, paint stabilizer is a complex organic cadmium compound which does not contain fatty acids such as lauric acid. Manufacturer reports that material is a very satisfactory heat and light stabilizer and with ester-type plasticizers has

MATERIALS

given over 1000 hr in the Fadeometer. Additional data on stabilizer are given in detail in Bul 4053.

Because of its catalytic action on cobalt and manganese driers, drier catalyst described in Bul 4253 actually accelerates the drying speed of these driers. The replacement of cobalt drier with a combination of the drier catalyst and a manganese drier will, for many purposes, free cobalt metal for more strategic uses. Manufacturer claims that finish will show definite improvement as a result of this substitution. Advantages and applications of drier catalyst are outlined in Bul 4253.

Bul 4353 deals with two Rare Earth driers — one is a completely soluble, metallic naphthenate solution in mineral spirits of Rare Earth metals and naphthenic acid; the other is a similar compound, but made with 2-ethyl hexoic acid in place of the naphthenic acid. The first product consists mainly of lanthene and cerium in equal proportions. Properties and advantages of two driers are outlined in factual data sheet.

Bulletins are issued by Advance Solvents & Chemical Corp., Dept. CP, 245 Fifth Ave., New York 16, N. Y. When inquiring specify CP 2232 on handy form, pages 2 and 3.

Offer two new aids to textile finishers . . .

one is noted for softening and plasticizing, other imparts lubricity and sewability

Textile processors, dyers, and finishers should be interested in a new series of compounds, two of which are being currently introduced.

First is Morofin R, a completely saturated fatty polyester supplied in the form of an easily dispersible white paste. Aid contributes anti-static and moisture-retaining properties as well as softening and plasticizing action to the fibers to which it is applied — woven and knitted fabrics, yarns, hosiery, etc. It is not sticky and will not cause stiffness or mark-off.

It is suggested for use alone or with weighing agents such as urea or inorganic salts, or with resins such as urea- or melamine-formaldehyde, polyvinyl acetate, polyacrylates or polymethacrylates, or with natural starches and gums, and with special finishing agents.

Second is Morolube BA, a non-ionic polyester combined with a completely saturated, non-saponifiable lubricant and offered as an easily dispersible, almost liquid, opalescent cream. Product imparts lubricity and sewability to treated fabrics without imparting any marked increase in softness. Improved sewability, of course, is especially desirable with resin-treated fabrics where softness tends to destroy the firm hand.

Suggested applications include woolen and wool-synthetic, as well as cotton fabrics.

(Products of the Moreland Chemical Company, Incorporated, Dept. CP, 314 West Henry Street, Spartanburg, South Carolina . . . or for more information check CP 2233 on handy form, pages 2 & 3.)

CHECK THESE PHYSICAL PROPERTIES OF LUCITE[®] ACRYLIC RESINS

		"LUCITE" 41	"LUCITE" 42	"LUCITE" 44	"LUCITE" 45	"LUCITE" 46
DENSITY, 25°C.		1.19	1.12	1.06	1.05	1.05
REFRACTIVE INDEX, 25°C.		1.493	1.484	1.480	1.477	1.4778
HARDNESS, ROCKWELL R (ASTM D 785-44T)		124	116	152	112	88
HEAT DISTORTION TEMPERATURE, 264 LB./SQ. IN. (ASTM D 648-45T)	°C.	72	55	<25	54	30
TENSILE STRENGTH (ASTM D 638-44T)	lb./sq. in.	7800	5400	500	3600	2100
ELONGATION AT BREAK (ASTM D 638-44T)	%	1	25	300	1	175
IMPACT STRENGTH, CHARPY UNNOTCHED	ft. lb./in.	4.1	4.1	3.4	0.8	1.4
DIELECTRIC STRENGTH (0.05 IN. FILM)	v./mil	740		625		
POWER FACTOR, 25° C., 60 CYCLES		0.065	0.045	0.068	0.012	
DIELECTRIC CONSTANT			2.9	2.9	2.5	

Here is a group of versatile resins you should investigate

These Du Pont "Lucite" acrylic resins are designed for use in solution applications and as modifiers for other resinous compositions. Soluble in a wide variety of polar and non-polar solvents and compatible with many plasticizers, this series of resins includes:

- "Lucite" 41 methyl methacrylate polymer
- "Lucite" 42 ethyl methacrylate polymer
- "Lucite" 44 n-butyl methacrylate polymer
- "Lucite" 45 isobutyl methacrylate polymer
- "Lucite" 46 copolymer of n-butyl and isobutyl methacrylates

These resins have excellent outdoor durability, are chemically stable at elevated temperatures, and are resist-

ant to water, aqueous salt solutions, and moderately concentrated acids and alkalis. Versatile in nature, they are used in lacquers and other finishes, in coatings for vinyl sheeting, and in adhesive compositions; in wax blends for use as a casting material, in aerosol preparations, and as modifiers for other resins.

Why not investigate the use of Du Pont acrylic resins in your business? We'll be glad to send you more information on these versatile materials—specifications, properties, suggested uses, etc. Just send in the coupon below, or write to: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Wilmington 98, Delaware.

AVAILABILITY: Du Pont "Lucite" acrylic resins—available as clear granular solids—are shipped in fiber drums.

* REG. U.S. PAT. OFF.



REG. U.S. PAT. OFF.
Better Things for Better Living
... through Chemistry

Polychemicals
DEPARTMENT
CHEMICALS • PLASTICS

E. I. du Pont de Nemours & Co. (Inc.)
Polychemicals Department 587, Wilmington 98, Del.

Please send me more information on Du Pont "Lucite" acrylic resins—specifications, properties, suggested uses, etc. I am interested in evaluating acrylic resins for the following applications:

Name _____ Title _____
Firm _____
Address _____
City _____ State _____

When inquiring check CP 2234 on handy form, pgs. 2-3

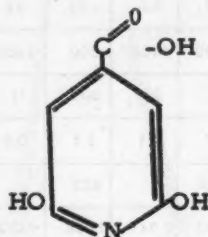
MATERIALS

Good starting material for dyes, pharmaceuticals . . .

reactive citrazinic acid has almost an unlimited number of derivatives

In the March 1953 issue of *CHEMICAL PROCESSING* a very brief news item appeared on the availability of citrazinic acid from this manufacturer. Now, more information is available and will be presented here.

Citrazinic acid CZA is 2,6-dihydroxy-4-carboxy pyridine, also known as 2,6-dihydroxy isonicotinic acid. Product was a laboratory curiosity until this manufacturer undertook an extensive research plan to produce it economically. Actually, citric acid is used as the starting material.



CITRAZINIC ACID

CZA is available as a buff to grey powder which chars without melting above 300°C. It is insoluble in water and in most organic solvents. Quinoline, pyridine, ethylene glycol, and propylene glycol are solvents for citrazinic acid. It is also soluble in strong alkali solutions and in concentrated sulfuric acid. The alkaline solutions are reported to develop a blue fluorescence on standing.

Indications are that citrazinic acid has a very low order of toxicity, thus it appears that no special precautions need to be taken in handling it. Tentative specifications are as follows:

Molecular weight	155.12
Appearance	buff to grey powder
Assay	
by ultraviolet absorption	95% min, 103% max
by alkali titration	98% min
Nitrogen	8.88% min, 9.18% max
Ash	<0.2%

REACTIONS

Carboxyl group: The esters, salts, amides, and hydrazides of citrazinic acid are reported to be readily prepared. Alkali salts are water soluble.

3, 5 Positions: CZA is very active as a coupling agent; it can be coupled with diazotized aromatic amines at either or both of the positions para to the hydroxyl groups. It is thus possible to prepare monoazo and diazo derivatives. The product resulting from the reaction of citrazinic acid with one molecule of a diazotized aromatic amine can be further coupled with the same or a different diazotized amine.

The wide variety of possible azo derivatives of citrazinic acid can be further increased by reactions involving the carboxyl or hydroxyl halves. The number of derivatives that can be prepared from this plurality is almost unlimited.

A number of these products are particularly useful in the azoic dye field, namely: monoazo and diazo



LIGHTER COLOR, BETTER HARDNESS CHARACTERISTICS OF IMPROVED ARMOWAX AID IN COATINGS, WAXES

By Dr. M. R. McCorkle, Technical Director,
Armour Chemical Division

Armowax® is a hard, brittle, high-melting wax, methylene bis-stearate, with some very interesting compatibility characteristics. For example, when mixed to the extent of 10% with paraffin wax, it gives internal crystallization on slow cooling, but at 50% the resulting compound is perfectly amorphous. Certain other waxes and wax-like materials, such as microcrystalline wax, show this same effect with Armowax.

With these compatibility and high-melting characteristics, Armowax is used in blends with materials such as paraffin wax and/or resins in protective films for electrical equipment. And, due to its considerably lower cost, it has found many applications as an extender or replacement for Carnauba.

SPECIFICATIONS

Free fatty acids	5.0%
Color (NPA)	6
Ash	0.03%
Specific heat	0.532 @60°C.
Flash point	250°C.
Fire point	258°C.
Molecular weight	579
Form	Lump or powder
Solidification point	132°C. (ASTM D-87-42)

COMPATIBILITIES

	% Armowax @ 25°C.		
Resin, oil, wax	10	50	90
Paraffin wax 51°	I	C	C
Carnauba wax	C	C	C
Castor oil	LC	C	C
Rosin W W	LC	LC	C
Stearic acid	C	LC	C
Oleic acid	LC	LC	LC
Ceresin	C	C	C
Ozocerite	C	C	C
Ethyl cellulose	C	C	C
Spermaceti	LC	C	LC
Beeswax	C	C	C
Mineral oil	LC	C	C

I—Incompatible; C—Compatible;
LC—Limited Compatibility.

© ARMOUR AND COMPANY



COMPATIBILITY IN PARAFFIN

% Armowax	Cloud Point	Compatibility @ 25°C
0	51	C
2	108	C
5	113	C
10	121	I
25	123	I
50	126	C
75	130	C
90	131	C
100	134	—

APPLICATIONS

Non-ionic Armowax emulsion:	(% by weight)
Armowax	10%
Emulsifier*	2
Water	88

*EMULSIFIER:

Ethomeen T/25	77%
Stearic acid (Neo-Fat® 18)	23

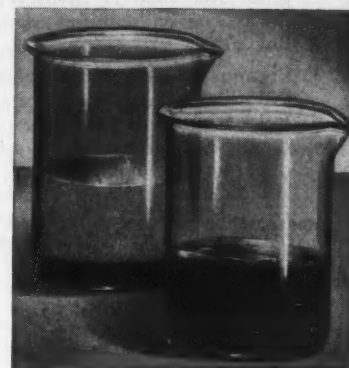
Heat the Armowax and emulsifier together to approximately 140°C. Add in a thin stream to boiling water, using vigorous agitation. Continue agitation until smooth (approx. 1 hour), or put the crude emulsion through a colloid mill or the equivalent. (Note: lumping may occur, but the emulsion smooths with continued agitation.)

This emulsion is extremely stable, of fine particle size, and very easy to prepare. It can be diluted to any desired concentration, and where increased viscosity is not important, emulsions up to 25% may be produced by reducing the amount of water. It can be used in automobile polish formulations and in coatings for paper. It forms films with maximum non-yellowing and non-rewettable properties.

Cationic emulsions made with Armowax will plate out on surfaces such as metals, wood, glass and fabrics. In high gloss polishes, Armowax will not settle out, insuring long product life without agitation. And because of its high melting point, it lends itself very well to buffing operations.

Information on the use of Armowax in emulsions is covered in our Technical Bulletin F-2. For more general information, send for a free booklet on the Armids.

ARMID O IMPROVES DYE SOLUBILITY IN PARAFFIN WAX



Improved dye solubility with Armid O is illustrated above. In the beaker on the right, only 5% Armid O, basis 100 parts 138-140° AMP paraffin wax, was required to solubilize the dye completely.

Armid O is a high molecular weight amide derived from crystallized oleic acid. Physically, it has better plasticity, compatibility and improved solubility over other products in the Armid group.

Since Armid O solubilizes more of certain dyes than castor oil, it is suggested for use to add both increased dye solubility and anti-stick qualities to carbon paper. In addition, Armid O is useful as an antiblock agent for synthetic resin and plastic films. It can be used to reduce tack in label lacquers. This fatty amide also possesses unusual mutual solvent powers for waxes and plastic materials. Send the coupon with your letterhead for free samples.



THE ARMIDS

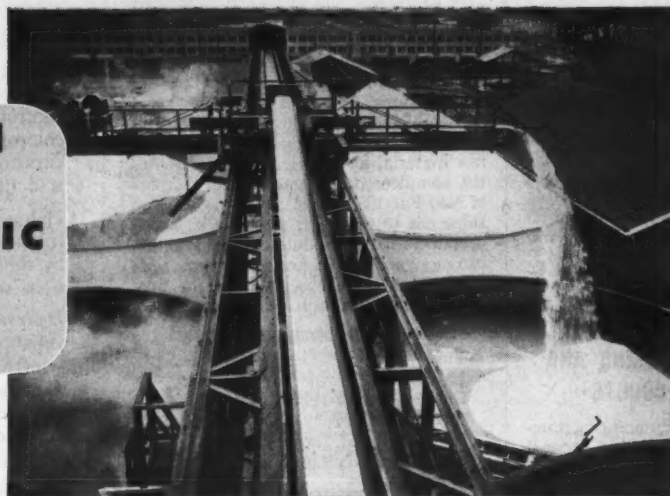
Complete physical and chemical properties of the Armids are covered in this booklet, which also covers Armowax. For more technical data on emulsions, get Technical Bulletin F-2.

VISCOSITY COMPARISON CHART

This chart converts a known viscosity reading to any of the other 17 major scales. For either of these additions to your library, send the coupon with your letterhead.

**Umpty-thousand
tons of
HOOKER CAUSTIC**

Coming up!

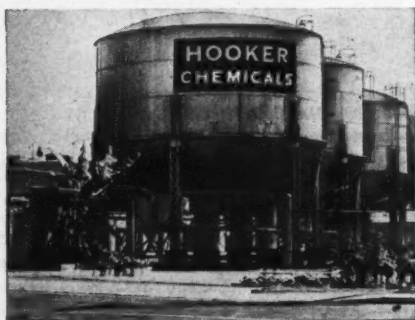


CONVEYORS feed salt to brine tanks for caustic soda and chlorine production in Hooker electrolytic cells.

We will produce more caustic soda this year than ever before in our history.

This would be meaningless, except that it expresses our belief in the future of the chemical industry—and our readiness to keep growing with it as one of your major suppliers of chemical raw materials and intermediates.

Today, more than ever, you can count on Hooker for dependable supplies of caustic soda, chlorine and many other industrial chemicals.



CAUSTIC SODA DISTRIBUTING STATION

5

Reasons for Specifying HOOKER Caustic

- 1 Large-tonnage production**—The biggest in nearly 50 years—means dependability of supply for you.
- 2 Quality caustic in the form to meet your needs** 50% and 73% liquid; flake; solid. Drums, tank cars, barges. An impressive background of experience in serving large users of caustic.
- 3 Technical service**—Willing, competent help in safe handling and use of caustic in your process. Experience gained from serving 30 industries is at your disposal.
- 4 Fast, dependable deliveries**—More facilities than ever before for getting caustic to you, on schedule.
- 5 If you use caustic in 1/c/l quantities**, you can now purchase caustic from a Hooker plant, warehouse or jobber near you. Write us for name and address of your nearest Hooker jobber.

FOR ANALYSES, PRICES, DELIVERY INFORMATION, write Hooker Electrochemical Company, 15 Forty-seventh Street, Niagara Falls, N. Y.—or phone your nearest Hooker sales office.

**HOOKER
CHEMICALS**

2-1934

HOOKER ELECTROCHEMICAL COMPANY

NIAGARA FALLS • TACOMA • NEW YORK • CHICAGO • LOS ANGELES

From the Salt of the Earth

When inquiring check CP 2239 on handy form, pgs. 2-3

MATERIALS

Experimental flame retardant has less tendency to weaken treated materials . . .

good resistance is shown to temperatures of 280°F

What is called a new and more stable flame retardant for cotton, rayon, and paper has recently been made available in experimental quantities. X-12 is said to overcome a major drawback of many flame retardants currently in use—their tendency to weaken the fibers of treated material after exposure to higher temperatures or even normal aging. This fiber weakening, which may reduce tensile strength as much as one-half, is usually accompanied by darkening or browning off of the material. X-12 shows every indication of licking both problems.

The retardant does not noticeably stiffen treated material. As an added bonus, it has the ability to stabilize a number of dyes toward light. Fade-Ometer tests show that it actually makes some colors more resistant to fading.

X-12 is offered as water-soluble crystals, solution of which is easy to apply at room temperature. Treated material can be dried at temperatures as high as 280°F. This heat resistance may make it useful in areas where ordinary retardants have had tough going—in plastic-coated fabrics, for example, where the plastic is applied at high temperatures—and it also may be in cotton material to be schreinered or embossed with heat. The same heat resistance makes it possible to dry treated work clothes without weakening the material. Ordinary steam dryers operate at 250°F—too high for most flame retardants.

(X-12 is a product of the Grasselli Chemicals Department of E. I. Du Pont de Nemours & Company (Inc.), Dept. CP, Wilmington 98, Delaware . . . or for more information check CP 2240 on handy form, pages 2 and 3.)

Lists developments on processes for making aerosols and plastics

Developments in chemical processes for production of aerosols, plastics, and fuels and lubricants are described in recent technical bibliography. In the field of aerosols, report is available which tells of the application of the Perrin theory to light scattering phenomena observed from sulfur hydrosols of various particle sizes. In addition, report outlines methods of forming, detecting and measuring the size and concentration of liquid aerosols in the size range of 0.01 to 0.25 microns diameter.

It is stated in report dealing with plastics that the synthesis of vinyl compounds has been worked out to the point where substituted styrenes, vinyl polynuclear hydro-carbons, and vinyl hydroaromatic compounds can be prepared readily. Details related to this mechanism are discussed.

Reports in the fuels and lubricants field deal with such topics as performance studies of experimental aviation fuels employing high anti-knock blend agents, heat flow and diffusion in the chemical reaction of a finite solid with a gas, and

MATERIALS

investigation of spontaneous ignition temperatures of organic compounds with particular emphasis on lubricants.

The March, 1953 issue of "Bibliography of Technical Reports" can be obtained by remitting 50c direct to Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D.C. Make check or money order payable to the Treasurer of the United States.

Canadian production adding to hydrogenated castor oils

Hydrogenated castor oil is now available from Canadian production, according to a recent report, and is being marketed under maker's tradename, Harwax G.

Product is a hard waxy solid with high melting point, 180°F; it is soluble in most organic solvents, but insoluble in water. Main component of Harwax G is the glyceride of 12-hydroxy stearic acid. The hydroxyl group of the component hydroxy stearic acid allows product to undergo some of the reactions of a fatty alcohol, in addition to all the normal reactions of a triglyceride.

A few of the outstanding applications are in all-purpose greases, polishes, electrical insulations, protective coatings, inks, cosmetics, pharmaceuticals, candles, leather dressings, and waterproof coatings for paper.

(Produced by W. C. Hardesty Company of Canada, Limited, and also offered under tradename Cenwax G by W. C. Hardesty Company, Incorporated, Dept. CP, 41 East 42nd Street, New York 17, New York . . . or for more information check CP 2241 on handy form, pages 2 and 3.)

Deals with growth of tall oil usage in the protective coatings field

Beginning with a brief review of the origins and nature of Tall Oil and methods of refining, reprint of a recent address given at a technical meeting outlines recent developments in the usage of Tall Oil. A number of special methods of separation which have been used to separate the fatty and rosin acid components of Tall Oil are discussed in detail.

Primarily, the address dealt with the growth of the material's usage in the protective coatings fields — in driers and drying oils — where the material has proved particularly useful. According to the speaker, tallate paint driers can replace naphthenates and ethyl hexoates. In addition to material's uses in the drying oil field, reprint outlines oil's advantages when used for in situ esterification.

"New Developments in Tall Oil Affecting the Fats and Oils Field" is issued by The Tall Oil Association, Dept. CP, 122 E. 42nd St., New York 17, N. Y. When inquiring specify CP 2242 on Reader Service slip, pages 2 and 3.

since 1948...

Zymadrops

30 cc.

Zymadrops

Upjohn

Glycerine acts as a
Suspending Agent

Glycerine in a vitamin mixture? Of course U. S. P. Glycerine is just as much at home in the new multiple vitamin suspensions as it is in the drug industry's old familiar tinctures and fluid-extracts. Upjohn's ZYMADROPS®, one of today's widely used vitamin supplements, make good use of Glycerine's action as a suspending agent, solvent, flavor, and preservative.

Nothing takes the place of Glycerine—in the latest pharmaceutical formulations as well as the old standbys of the drug industry. Glycerine's unusual combination of properties just cannot be matched.

In addition to the range of properties Glycerine exhibits in the ZYMADROPS® formula, it can also act as an emollient . . . demulcent . . . humectant . . . plasticizer . . . lubricant . . . and anti-freeze.

And U. S. P. Glycerine permits formulation of products which are physiologically safe. No wonder Glycerine is an ingredient in hundreds of proprietary remedies, in one out of four prescriptions, in over 50% of all liquid medications compounded by the druggist!

A handy, 16-page booklet, "Why Glycerine for Drugs and Cosmetics?" which describes Glycerine's properties and applications, is yours for the asking. Write Glycerine Producers' Association, 295 Madison Avenue, New York 17, N. Y.

Nothing takes the place of Glycerine

When inquiring check CP 2243 on handy form, pages 2-3

how to make trace metals TRACTABLE

...the

Versenes®

TRACE METAL TROUBLES

Infinitesimal as they may be, Trace Metals may cause all kinds of costly complications. In industrial processes and products they spoil chemicals, soaps, textiles, dyes, rubber, hides, foodstuffs, metals, plastics, paints, adhesives, drugs, pharmaceuticals, fertilizers, and dozens of other things as well. Recent intensive research on trace metal deficiency in agriculture and medicine now furnishes profound clues to the causes of sickness, health and well-being in living things. Control through chelation is the remedial action indicated.

VERSENE — POWERFUL CHELATING AGENT

As a powerful chelating agent, it is Versene's job to make trace metals tractable. It keeps them under precise control. Properly used, one or more of the Versenes and the chemistry of chelation can correct excesses or deficiencies of metallic ions. Whenever these trace metal disturbances occur they are ready to rush to your rescue.

COMPLEXING POWER GUARANTEED UNIFORM

The Versenes are extremely stable at high temperatures throughout the pH range. Made only under processes originated, developed and patented by F. C. Bersworth, uniformity of complexing power is guaranteed in either sample or carload quantities. Write Dept. X. Ask for Technical Bulletin No. 2 and samples. Chemical Counsel available.

VERSENE WATER TEST KIT. Tells total hardness in 2 minutes. Accurate to 1 gr. per gallon. Complete with instructions. \$3.00 postpaid.



"Chemistry's most precise chemicals"
BERSWORTH CHEMICAL CO.
FRAMINGHAM, MASSACHUSETTS

WAREHOUSE STOCKS

Providence Agent: George Mann & Co., Inc., 251 Fox Point Boulevard, Providence, R.I.
W. Coast Agents: Braun-Knecht-Helmann Co., San Francisco, Calif.
Van Waters & Rogers, Inc., Seattle, Wash., & Portland, Ore.
Braun Corp., Los Angeles, Calif.
Midwest Agent: Kraft Chemical Co., Inc., 917 W. 18th Street, Chicago
Wasatch Chemical Co., Salt Lake City, Utah
Southwest Agents: Barada & Page, Inc., Dallas, Houston, Kansas City, etc.
Chas. S. Tanner Co., 1815 Liberty Life Bldg., Charlotte, North Carolina
Siegel Chemical Co., Brooklyn, N.Y.

When inquiring check CP 2244 on handy form, pgs. 2-3

MATERIALS

20-40° lower process temps for new PVC resin...

due to lower intrinsic viscosity

Latest addition to the Pliovic polyvinyl chloride resin line is Pliovic G80V — a general purpose, straight vinyl material having an approximate intrinsic viscosity of 0.80. Processing temperatures are 20-40°F lower than those for previously announced G90V — due to the lower intrinsic viscosity. It is intended for calendering, coating, and extruding operations.

Thermal stability is reported to be comparable to G90V, and this, combined with lower fusing temperatures, permits rapid calendering and extrusion. Both clear and pigmented products are said to benefit from G90V's good light stability and color.

Resin is said to run easily on three rolls of a standard calender. Soft stocks are readily compounded for fabric coatings. Rainwear, draperies, upholstery, shower curtains, and many industrial applications are recommended. Following is a tabulation of physical properties:

Vinyl chloride content, %	100
Specific gravity	1.40
Dry sieve analysis,	
100% through	40 mesh
Bulk density, lb/cu ft	44
Moisture content, %	0.5

(G80V is a product of the Chemical Division, Goodyear Tire & Rubber Company, Inc., Dept. CP, Akron 16, Ohio... or for more information check CP 2245 on handy form, pages 2 and 3.)

OTS bibliography lists reports

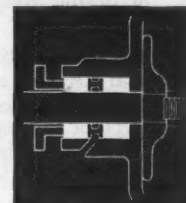
Among reports listed as available in January issue of "Bibliography of Technical Reports" are: ammes as silicone catalysts; correspondence, reports, and patent on production of anhydrous sodium hypochlorite (I. G. Farbenindustrie); removal of hydrogen sulfide and carbon dioxide from synthesis gas using di- and tri-ethanolamine; and Catalytic hydrogenation of some aryl substituted aliphatic acids.

To obtain "Bibliography of Technical Reports, Vol. 19, No. 1" remit 50c direct to U.S. Department of Commerce, Office of Technical Services, Washington 25, D.C.

Pump Packing made of Du Pont TEFLON® saves manufacturer \$870 in 27 months

Here is a typical case history of "Teflon" in process equipment. Consider how this plastic can save money and do a better job for you.

CONDITIONS: Centrifugal pump with 1/8" shaft, handling 98% sulfuric acid at 1750 rpm.



	CONVENTIONAL PACKING	"TEFLON"
cost per unit	\$1.10	\$11.28
service life	1/4 week	27 months
packing cost per month	\$8.80	\$.42
labor cost per month	\$24.00	\$.11
total cost per month	\$32.80	\$.53
cost for 27 months	\$886.00	\$14.30
SAVINGS		\$870

The Du Pont Polychemicals Department supplies "Teflon" in the forms of molding powder and aqueous dispersions. We'll gladly suggest names of processors of sheets, rods, tubes and finished parts. For full information, write: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Room 167 Du Pont Bldg., Wilmington 98, Delaware.



*Trade-mark for Du Pont tetrafluoroethylene resin

BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

When inquiring check CP 2246 on handy form, pgs. 2-3

Quality Fabrics — FOR THE

Chemical INDUSTRY

"The Preferred Source of Supply"

"SAN JUAN" Cotton Duck
NUMBERED DUCK
IN ALL WIDTHS AND WEIGHTS

Filter Twills • Chain Cloths
Press Cloths • Enameling Duck
Selected Osnaburgs

Our technicians will gladly aid in creating industrial fabrics to your specification. We solicit your inquiries.



B. J. BARRY & CO.
INCORPORATED

62 WORTH STREET • NEW YORK 13
AKRON • BOSTON • LOS ANGELES • NEW ORLEANS
MILLS AT: Lincolnton, N. C. and Roanoke, Ala.

When inquiring check CP 2247 on handy form, pgs. 2-3

Offers control of H_2O_2 at any point in processing applications . . .

liver catalase reacts with dilute H_2O_2 to form water and oxygen

Liver catalase — maker's Catalase 10 — is now being offered to research people for development work. The material, a tan colored powder, is believed to have a potentially large number of food and industrial applications because of the specific reaction of catalase with hydrogen peroxide.

The enzyme catalase, when brought into contact with dilute solutions of hydrogen peroxide, converts it rapidly into water and oxygen. This makes it possible to stop the action of hydrogen peroxide at any desired point in a processing application. Catalase is consequently being evaluated in conjunction with hydrogen peroxide for the selective control of microorganisms in dairy products and other edible preparations.

Also indicated for the same reason is the use of catalase and hydrogen peroxide in fermentation processes, and in the control of bleaching or oxidation in such fields as soap, textile, fur, and cosmetic processing.

One pound of Catalase 10 is capable of liberating almost 5000 cu ft of oxygen from dilute solutions of hydrogen peroxide, indicating potential as a blowing agent and foaming agent in aqueous systems, and also as a source for oxygen.

(Catalase 10 is a development of the Research Division of Armour and Company, Dept. CP, 1355 W. 31st St., Chicago 9, Illinois . . . or for more information check CP 2248 on handy form, pages 2 and 3.)

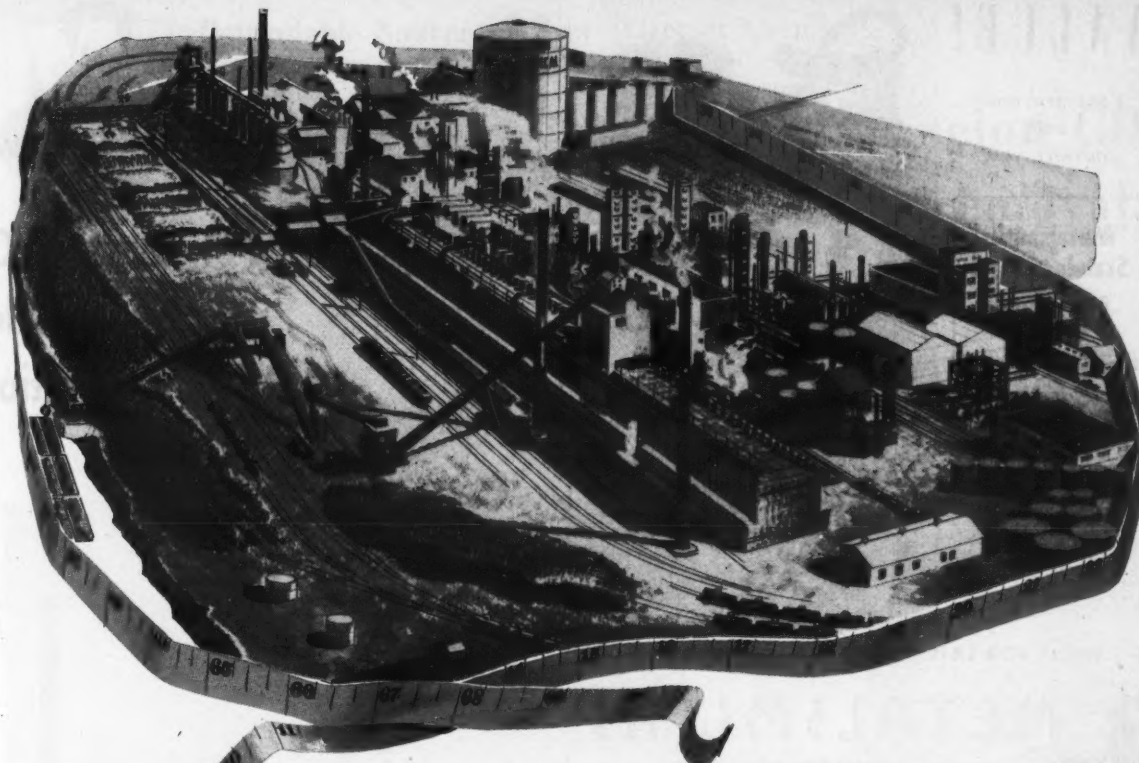
Suggests three-step program for insect control

Eight-page, illustrated folder deals with control of industrial and institutional insect infestations. Manufacturer of various insecticides and fumigants described in folder suggests a three-step program for economical control of insects.

Steps of program are outlined as: (1) use of proper atomizing and/or spraying equipment; (2) use of proper insecticide formulated specifically for type of job to be done; and (3) proper survey and analysis of plant requirements together with a tailor-made program for insect control in individual plants.

Folder discusses types of equipment, installations and minimum quantities of insecticide needed to rid various sized areas of flying and crawling insects. Manufacturer's specially-designed fogging and spraying equipment and different insecticides and fumigants are described in some detail.

Insect control folder is issued by West Disinfecting Co., Dept. CP, Long Island City, N.Y. When inquiring specify CP 2249 on handy form, pages 2 and 3.

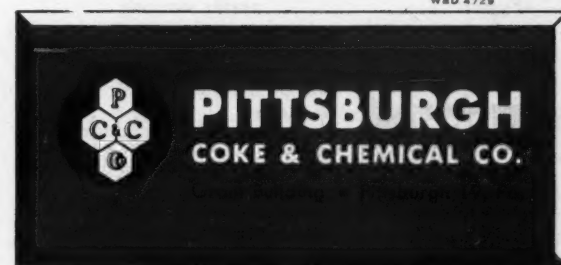
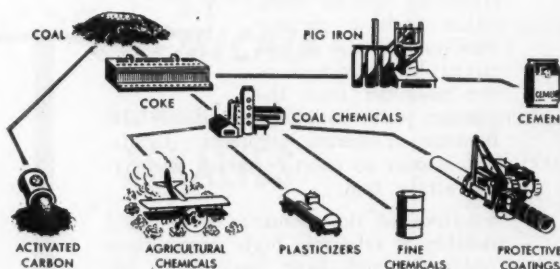


**You can measure integration in YARDS
at PITTSBURGH COKE & CHEMICAL**

YARDS . . . steps . . . or a stone's throw. Measure it as you will. The operation of Pittsburgh Coke & Chemical's Neville Island plant adds up to one of the most highly integrated manufacturing plants in the world today.

Within a few hundred yards . . . within a few dozen hours . . . this plant transforms small mountains of coal into insecticides, dyes, pig iron, cement and a score of other coal-derived or coal-related products that serve American industry and agriculture.

Is integration so highly developed as this *really* important? We think it is . . . and so do Pittsburgh Coke & Chemical customers. Because it enables us to keep an engineering finger on quality at *every* step of production, and to provide our customers with a reliable continuity of supplies that can stem only from an operation that's genuinely basic. *Aren't those the assurances you want, too?*



When inquiring check CP 2250 on handy form, pgs. 2-3

VALUE!

Your first order
will
convince you!

"Metalsmiths"
Stainless Steel
and Monel
Utensils

Prompt shipment
—anywhere!

We've shipped "Metalsmiths" corrosion-resistant utensils all over the world for more than 30 years, with utmost satisfaction. Highest quality materials and workmanship assure long wear. All items shown, plus beakers, stock pots, butch cans and shovels, in stock. Buy, try, compare!



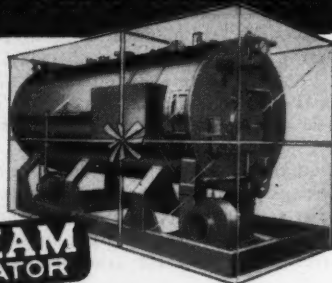
WRITE FOR LATEST CATALOG — PRICE LIST

METALSMITHS
Division of Orange Roller Bearing Co., Inc.
336 White Street Orange, N.J.

When inquiring check CP 2251 on handy form, pgs. 2-3

**TROUBLE-FREE PACKAGE
for LOW-COST STEAM!**

10 to
600 h. p.
15 to
200#
OIL or
GAS



**AMESTEAM
GENERATOR**

- Complete — ready to connect and operate.
- Saves labor — fully automatic.
- Saves fuel — 80% guaranteed efficiency.
- Easy maintenance — all parts readily accessible.

WRITE FOR FREE BULLETIN TODAY

**AMES
IRON
WORKS
INC.**

BOX B-73
OSWEGO, N. Y.

AMES IRON WORKS
Box B-73, Oswego, N. Y.

Gentlemen:
Please send me further information
on AMESTEAM GENERATORS
and name of nearest representative.

NAME.....
COMPANY.....
ADDRESS.....

When inquiring check CP 2252 on handy form, pgs. 2-3

materials

Polymerizes, Copolymerizes to Form Endless Number of Useful Reaction Products

Acrylic acid also undergoes wide variety of double bond reactions

USES: Acrylic acid is of potential value in many industrial applications, especially in adhesive, textile, and agricultural chemicals. Other potential applications include: colloids, dyeing aids, germicides, high-temperature greases, insulation, ion exchange resins, leather, paper, photographic arts, soil treatment (drilling muds, soil conditioning, and soil stabilizing), surface active agents, surface coatings, synthetic rubber, textiles, and others.

Features: This vinyl compound is readily polymerized and copolymerized, and undergoes a wide variety of typical double bond reactions. Product is currently offered by manufacturer in pilot plant quantities.

Description: Acrylic acid (anhydrous) is a water-white mobile liquid with a penetrating odor similar to acetic acid. Anhydrous form may be obtained by vacuum distillation with a suitable inhibitor, or may be obtained by extraction of the monomer from the aqueous phase with ethylene dichloride. Benzene or hexane azeotropic distillation is also an effective means for drying acrylic acid.

Solutions of the monomer show good stability at relatively high temperatures (60-90°C) and have long shelf life when inhibited with common inhibitors.

The polymerization of acrylic acid will be given emphasis here, even though it undergoes salt formation, esterification, formation of acrylyl chloride and acrylic anhydride, addition reactions, diene reaction, reaction with aryl diazonium chlorides, reaction with isocyanates, reaction with carbon monoxide, reduction, oxidation, and electrolysis.

Acrylic acid is recognized as one of the most reactive common vinyl monomers. Although quantitative data are not available, it is believed that acrylic acid is comparable to acrylonitrile in rate of polymerization.

Polymerization is quite exothermic (18.5 k-cal per mole), so consequently bulk or concentrated polymerization is not only difficult to control but may actually be hazardous. A further disadvantage in polymerizing concentrated solutions is the lack

of solubility of the polymer in the monomer, leading to occlusion of the monomer in the solid phase. Subsequent polymerization of the occluded monomer causes localized overheating which results in rupture and decomposition of the

polymer particles. Polymerization of anhydrous acrylic acid can, of course, be accomplished in organic solvents.

Polymerization Inhibitors

As indicated, the high reactivity of acrylic acid and its solutions necessitates stabilization with polymerization inhibitors. Phenolic substances, especially hydroquinone, inhibit polymerization



and inhibition is reported to be dependent upon the presence of oxygen absorbed in the monomer. Anhydrous halides of arsenic, tin, antimony, and bismuth also act as inhibitors. Various metallic salts which are soluble in the monomer also act as inhibitors — acrylic acid salts of copper, iron, chromium, zinc, lead, and mercury. Other recommended inhibitors are methylene blue, di-beta-naphthol, and copper powder.

Acrylic acid may be polymerized in the presence of most inhibitors, however, a greater percentage of catalyst is required and a slight induction period is needed. When hydroquinone is used as the inhibitor, it may be used as the reducing component in a redox catalytic system.

Polymerization Catalysts

Most of the common catalysts used for vinyl polymerization are applicable to monomeric acrylic acid. Both heat and light catalyze polymerization. Photopolymerization is inhibited by the presence of oxygen, while thermal polymerization is accelerated under this condition. Use of 2,7-dichloro diphenylene sulfone in combination with ultraviolet light has been used in the preparation of polyacrylic acid.

Conventional peroxides and redox systems, such as persulfate with sodium bisulfite, also are effective catalysts. Diazothioethers in a redox system have also been used. N-chlorohydantoin, ferrous-2,2'-dipyridyl sulfate, and sulfinic acids are said to be effective catalysts for polymerizing acrylic acid at temperature from 10-25°C. In addition, an electrolytic cell has been employed for initiating acrylic acid polymerization.

Polymerization

A typical formulation for the preparation of polyacrylic acid is given below:

	Parts
Acrylic acid (60%)	167
Water	232
Potassium persulfate	0.500
Potassium metabisulfite	0.250

Catalyst is added to the water at 60°C. The addition of acrylic acid takes 1/2 hr and the reaction is heated for an additional 1/2 hr at 60°C. This results in a 25% solution of polyacrylic acid with a specific viscosity of about 1.5 cps.

Salts of acrylic acid will polymerize to give the corresponding polyacrylates. A weakly acid solution is the most favorable condition for this reaction. A typical formulation is as follows:

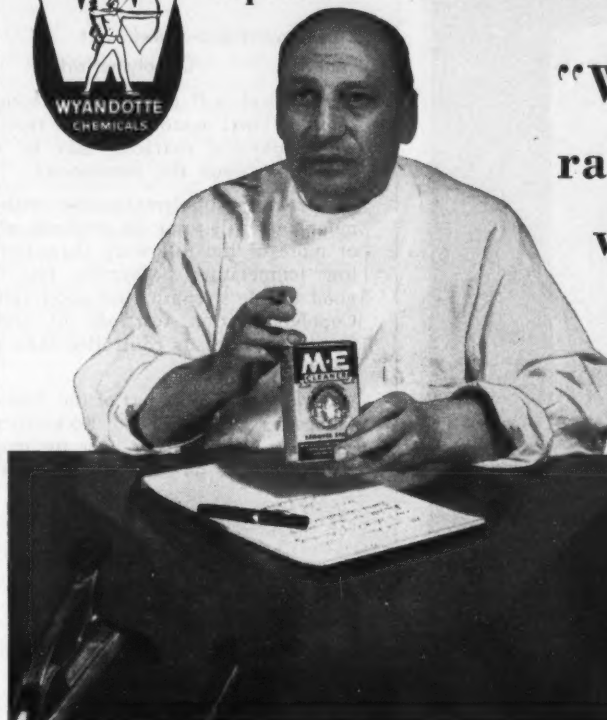
	Parts
Acrylic acid (50% aqueous)	144
Sodium hydroxide (21% aqueous)	172
Potassium persulfate	0.25

Polymerization is initiated at 30°C and the exotherm causes the temperature to rise rapidly to 90°C. After polymerization the viscous solution is neutralized and diluted to give 25% solids. On cooling, this is a viscous, gel-like solution.

(Continued on next page)



Dependable Source of Raw Material Chemicals



Francesco Jannicelli

"We have used many alkylarylsulfonates," says Mr. Jannicelli, president of Maid-Easy Cleansing Products Corp., Mount Vernon, N.Y., "and have never had as good results as we have obtained with Wyandotte Kreelon CD.

"This Wyandotte product combines the advantages of a synthetic detergent and a detergent-promoter in one, and it gives us a better, more uniform finished product that is easy on the hands.

"We are so pleased with the ad-

**"Wyandotte Kreelon CD
raised our soil removal,
whiteness retention,"**

says **FRANCESCO JANNICELLI,**
Maid-Easy Cleansing Products Corp.




vantages to us — savings in storage space, reduced handling and mixing time, and improvements in soil removal against the products we previously used — that we have switched over a great many of our compounds to a Kreelon CD base."

Have you tried Wyandotte KREELON* CD? Not only does its emollient characteristics reduce skin irritation, but KREELON CD's detergency offers a 20-70% improvement in soil removal and whiteness retention properties.

Also, do you know about Wyandotte's new KREELON 8D and 8G which offer better economy and greater solubility than other high, active-agent detergents? Both of these products have improved whiteness-retention properties and are ideal for commercial laundry and household formulations.

Let us send you a sample and data on Wyandotte KREELON. Mail coupon today, or write for helpful technical assistance. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*

*REG. U.S. PAT. OFF.

 **Wyandotte**
CHEMICALS
Headquarters for
ALKALIES

Wyandotte Chemicals Corporation, Dept. CP, Wyandotte, Michigan

Send for free literature on: ☐ Kreelon 4D Flake, ☐ 4G Powder (40% active agent)
☐ Kreelon 8D Flake, ☐ 8G Powder (85% active agent)
☐ Kreelon CD (Promoted Syndet)

Send sample quantity of: Kreelon 4D (), 4G (), 8D (), 8G (), CD (), for use in:

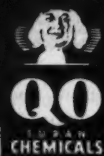
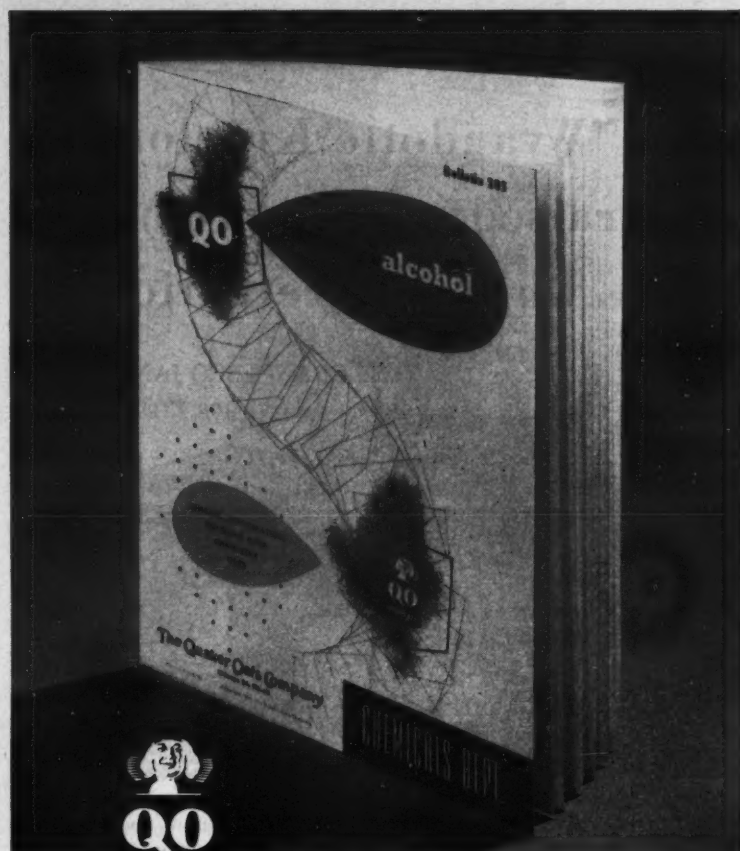
Name _____ Title _____

Firm Name _____

Address _____

City _____ Zone _____ State _____

When inquiring check CP 2253 on handy form, pgs. 2-3



*Find out where Furfuryl Alcohol
fits into **YOUR** picture*

Bulletin 205—just released—gives you useful information on commercial handling, physical data, chemical reactions and established uses of FA* furfuryl alcohol. Find out how FA can serve you efficiently and economically as a resin ingredient, as a wetting agent, reactive solvent and as a solvent for resins and dyes.

*Reg. U. S. Pat. Off.

The Quaker Oats Company

WRITE TODAY FOR BULLETIN 205

CHEMICALS DEPT.

336P The Merchandise Mart,
Chicago 54, Illinois
Room 536P, 120 Wall St., New York 5, N. Y.
Room 436P, P.O. Box 4376, Portland 8, Oregon

Please send me a copy
of the new Bulletin 205,
without obligation.

NAME _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

When inquiring check CP 2254 on handy form, pgs. 2-3

MATERIALS

(Continued from preceding page)

Copolymerization

Acrylic acid will copolymerize with most of the common vinyl monomers. This results in products whose physical character may be varied widely depending upon the comonomer.

In general, copolymerization with other vinyl monomers will result in products which offer one or more of the following characteristics — good low temperature properties, fair oil resistance, good tensile strength, and good aging properties. Copolymerization reactions of acrylic acid are usually more easily controlled than are the homopolymerizations.

(Acrylic acid is a product of the American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, New York . . . or for more information check CP 2255 on handy form, pages 2 and 3.)

Pabst producing its first biochemical from yeast . . .

hexokinase reported to be stable at temperatures of 4°C and below

Production has recently been started for the enzyme hexokinase. This is the first enzyme added to maker's fine biochemicals made from yeast. It is supplied as a dry lyophilized powder, stable at temperatures of 4°C and lower. Product should encourage further research on fermentation, glycolysis, and clinical studies on intermediary metabolism. It has already been tested in a number of enzyme reactions with good response.

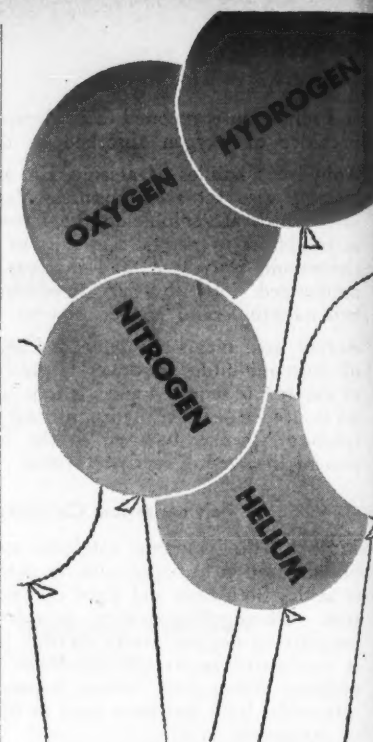
(Product of Pabst Laboratories, Research Division of the Pabst Brewing Company, Dept. CP, 1037 West McKinley Avenue, Milwaukee 3, Wisconsin . . . or for more information check CP 2256 on handy form, pages 2 and 3.)

Prevents microbial decomposition of water-base adhesives

Since many commercial water-base adhesives consist of animal or vegetable compounds, they are subject to microbial decomposition. Such degenerative changes usually impair adhesiveness of the preparation and are attended by unpleasant odors. Sometimes the finished product is discolored as well.

Manufacturer of sodium pentachlorophenate reports it to be a highly effective water soluble preservative for water-base adhesives. While it does inhibit microbial growth, this material does not interfere with adhesive action, does not discolor the finished product and is lasting in its preservative action.

Properties and function of sodium pentachlorophenate in the prevention of microbial decomposition of animal or vegetable adhesive compounds are described in a revised technical bul-



MAGNOLIA AIRCO

supplies the southwest!

Magnolia Airco gases and liquids . . . rare gas mixtures . . . xenon . . . krypton . . . and neon conform to specification. You can count on their purity and consistent uniformity—every shipment packaged to your requirement! Consult your nearest Magnolia Airco office for full details.



AIR REDUCTION MAGNOLIA CO.

A Division of Air Reduction Company, Incorporated
Beaumont • Corpus Christi • Dallas • El Paso
Fort Worth • Hobbs • Houston • Oklahoma City
San Antonio • Shreveport • Tulsa • Wichita Falls
Southwestern Headquarters for Oxygen, Acetylene
and Other Gases . . . Carbide . . . Gas Welding
and Cutting Machines, Apparatus and Supplies
. . . Arc Welders, Electrodes and Accessories.

at the frontiers of progress
you'll find



When inquiring check CP 2257
on handy form, pgs. 2-3

CHEMICAL PROCESSING



HOLD IT! Keep That Idea Bright **SOLKA-FLOC**

helps turn new ideas
into new products

SOLKA-FLOC—the newest and most modern form of cellulose—is bringing to light a great many new products that couldn't be made before with older forms of cellulose.

A product of Brown Company Research, loose, free-flowing SOLKA-FLOC reacts far faster, is much easier to handle and has unusually high density.

So, if you have an idea of any kind about a new product or an improvement of your present product, tell us about it. SOLKA-FLOC may be exactly what you need. Write to our Technical Service, Department FB-7 in Boston for samples and information.

Prompt shipment guaranteed—pounds to carloads.

BROWN



COMPANY, Berlin, New Hampshire
CORPORATION, La Tuque, Quebec

General Sales Offices:
150 Causeway Street, Boston 14, Mass.
Dominion Square Bldg., Montreal, Quebec

SOLKA & CELLATE PULPS • SOLKA-FLOC •
NIBROC PAPERS • NIBROC TOWELS • NIBROC
KOVITOWLS • BERMICO SEWER PIPE, CON-
DUIT & CORES • ONCO INSOLES • CHEMICALS

When inquiring check CP 2258
on handy form, pgs. 2-3

MATERIALS

letin (Bul O-1). Included in the bulletin is a table of typical use-concentrations with common organic adhesive materials as well as instructions for applying and handling the material.

Additional technical data for the compound are presented in Bul O-23 which outlines chemical and biological properties of the product as well as giving instructions for handling and preparation of solutions of sodium pentachlorophenate.

Bul O-1 and O-23 are issued by Organic Chemicals Div., Monsanto Chemical Co., Dept. CP, 1700 S. Second St., St. Louis 4, Mo. When inquiring specify CP 2259 on handy form, pages 2 and 3.

Coatings field offered 2 synthetic resins

Two synthetic resins for the coatings field are currently being offered:

First is a synthetic copal resin concentrate type designated as Krumbhaar 666 and recommended for medium and low priced varnishes and enamels . . . non-penetrating vehicles for flats, undercoats, and primers . . . and finishes for walls, floors, woodwork, and implements.

Oil combinations with gum rosin or tall oil are reported to yield relatively inexpensive varnishes which equal or surpass phenolic, maleic, or penta-type varnishes in drying, gloss, and resistance.

Second is a ketone-base synthetic resin designated as Krumbhaar 1717 and finding main uses in vinyl coatings, cellulose lacquers, label coatings, gasoline-resistant finishes, and rotogravure inks as well as aniline inks.

Product is pale in color, gives high gloss, and is soluble in alcohol. Good compatibility is shown with vinyl and cellulose derivatives, and adhesive strength is said to be high.

(Product of Krumbhaar Chemicals, Incorporated, Dept. CP, South Kearny, New Jersey . . . or for more information reader may simply check CP 2260 on convenient Reader Service slip between pages two and three.)

Gives descriptions and uses for coal-tar chemicals

Sixteen-page, factual booklet gives concise descriptions and outlines uses for a large number of industrial chemicals, most of which are of coal-tar origin. Included among the categories listed in bulletin are tar acids, tar acid oils, plasticizers, phenolic resins, rubber compounding materials, coal-tar bases, aromatic industrial solvents, flotation agents, and tar distillates.

"Standard Industrial Chemicals" is issued by Barrett Div., Allied Chemical & Dye Corp., Dept. CP 40 Rector St., New York 6, N.Y. When inquiring specify CP 2261 on handy form, pages 2 and 3.



STEPAN CHEMICAL COMPANY

NEW FATTY ALCOHOLS and fatty alcohol sulfates

These new Stepan higher fatty alcohols, called Makanol, from tallow, soya, fish and linseed oils lend themselves to a wide range of applications including the suggested uses below.

SULFATES of these Makanol are also available in a variety of forms as sodium salts or alkylamine salts. Their excellent detergency and low defatting of the skin makes them ideal for use in shampoos, heavy-duty household detergents and other detergents in either liquid or solid forms.

Both the primary Stepan Makanol and their sulfates are available in commercial quantities based on semi-works unit production.

TENTATIVE SPECIFICATIONS

	% Myristyl Alcohol	% Cetyl Alcohol	% Stearyl Alcohol	% Oleyl Alcohol	% Linoleyl Alcohol	Iodine No.	Saponifi- cation Value	Titre
MAKANOL I	6	27	15	50	2	55	2	42
MAKANOL II	6	27	67	4	2	52

SUGGESTED USES

Emulsions
Emulsifiers
Oil Additives
Chemical Intermediates
Esters
Plasticizers
Mold Release Agents
Rust Preventatives
Textile Sizing

Leather Stuffing
Resins
Metal Plating
Wax Compounding
Wetting Agents
and Detergents
Lubricants
Emulsion Stabilizers
Adherents in Cosmetics

Write for free Samples...

THE STEPAN

CHEMICAL CO.
2250 So. Kedzie Ave. • Chicago 23, Ill.

When inquiring check CP 2262 on handy form, pgs. 2-3



DISPERSE MORE SOLIDS WITH MARASPERSE

THE low cost, MORE EFFECTIVE DISPERSANT

With the addition of only .05% to a maximum of 3.0% of MARASPERSE, (based on weight of solids), from 35% to over 300% MORE SOLIDS MAY BE DISPERSED and maintained in fluid suspension.

MARASPERSE dispersants are MORE EFFECTIVE and considerably MORE ECONOMICAL to use. They are completely soluble in water; are non-hygroscopic, non-fermenting, non-caking, free-flowing powders.

MARASPERSE products are used in making water suspensions of organic pigments, sulfur, clays, titanium dioxide, carbon black, phenyl-beta-naphthylamine, etc., as dispersing and leveling agents for dyestuffs. Also as deflocculants and to increase strength in the manufacture of ceramic ware. As grinding aids and emulsifiers. In formulation of wetttable powder insecticides, industrial cleaners, boiler water treatment chemicals. For mud control in oil well drilling operations.

Write for File No. 701 for additional information on MARASPERSE products. You will receive complete and specific technical data. Our research staff will welcome the opportunity to cooperate with you.



MARATHON Corporation
CHEMICAL DIVISION • ROTHSCILD, WISCONSIN

When inquiring check CP 2263 on handy form, pgs. 2-3

MATERIALS

Manual, mechanical methods OK for protective coating of aluminum

Several years of intensive research have led to a new type of protective coating chemical for aluminum — called Alodine 1200. It is the only essential chemical needed to prepare the coating bath and the final rinse bath. It can be used in tanks in an immersion process, in a multi-stage power washer in a spray process, or with a brush or portable spray equipment in a manual process with a slight pH adjustment. All three methods of application are reported to easily meet Specification MIL-C-5541.

Alodine 1200 forms an amorphous mixed metallic oxide coating of low dielectric resistance that provides very good corrosion-resistance for unpainted aluminum, and forms an excellent paint bond . . . said to excel that obtained with chromic acid anodizing. Coating is specifically recommended for wrought products that are not painted or only partially painted, and for coating, casting and forging alloys that are generally painted.

Process sequence for all three methods is: 1) pre-cleaning, 2) rinsing, 3) Alodizing, 4) rinsing, 5) acidulated rinsing, and 6) drying. Coating time in an immersion process ranges from 2 to 8 minutes, and in a mechanical spray process about 30 seconds. Baths are operated at room temperature.

(Alodine 1200 is a product of the American Chemical Paint Company, Dept. CP, Ambler, Pennsylvania . . . or for more information check CP 2264 on convenient Reader Service slip between pages two and three.)

Appears to be the "universal" cement . . .

for quick-bonding of porous and non-porous materials — metals, wood, glass, etc

Uses: General-purpose thermoplastic cement for joining metals, wood, plaster, porcelain, stone, concrete, glass, etc. Adaptable for such applications as gluing, bonding, filling, and sealing.

Features: Requires no air for setting — will set under water. Sets completely hard in 5 minutes after which it is ready for finishing. After setting, it resists hydrochloric acid and will neither shrink, expand, crack, nor change shape.

Description: Designated as F-88, the cement is offered as a powder and a liquid that are mixed to a thick creamy paste at time of use. It is available in a full range of colors.

The quick setting feature makes it ideal for emergency applications. A choice of liquids is available for longer setting times.

(Samples are available from American Consolidated Dental Products Company, Dept. CP, PO Box 2015, Philadelphia 3, Pennsylvania . . . or for more information check CP 2265 on handy form, pages 2 and 3.)

DOW CORNING ANTIFOAM A



Add a trace of Dow Corning Antifoam A and use the space you've been wasting on foam.

FOR EXAMPLE:

- Antifoam A permits molasses processor to increase standard load from 18 to 24 tons . . .
- Antifoam A enables textile finisher to double color yield on vat dyes . . .
- Antifoam A ups vacuum concentration capacity 60% for food processor . . .

That's what we mean when we say foam's a thief. And you don't have to put up with it any more. Both Dow Corning Antifoam A and the new water-dispersible Antifoam AF Emulsion are effective at very low concentrations against a wide variety of aqueous and non-aqueous foamers. They are odorless, tasteless and harmless physiologically. Dow Corning Antifoam A can be used as received, mixed with one of the foaming ingredients or dispersed in a solvent for industrial application. Antifoam AF Emulsion is equally versatile and easily dispersed in water.

see for yourself!

mail coupon TODAY for free sample

DOW CORNING SILICONES
Dow Corning Corporation
Midland, Mich., Dept. BB-7

Please send me data and a

free sample of—

- ☐ Dow Corning Antifoam A or
☐ Dow Corning Antifoam AF Emulsion

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

When inquiring check CP 2266 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Softens fabrics to be weighted with urea, sugar

Uses: Anionic softener for cotton, acetate, viscose, and all synthetic fabrics. Effective on knit cottons and rayons which are to be heavily weighted with urea or sugars.

Features: Compatible with starches, dextrans, sugars, gums, and urea. Does not discolor whites, even on long standing, or affect light fastness of colors. Has some anti-static characteristics.

Description: Anatol BS is a light cream-colored paste consisting of sulfonated waxes and sulfated alcohols. It is readily soluble in water of at least 140°F, and resists solutions of dilute acids and alkalis. The pH of a 0.1% solution is 7 to 7.5.

Application may be by pad, quetsch or tube-tex machine. For most work, 2 to 3% of the weight of the goods is satisfactory, but larger quantities may be advisable for heavily weighted fabrics.

(Product of Textile Chemical Division, Dexter Chemical Corporation, Dept. CP, 819 Edgewater Rd., New York 59, New York . . . or reader may secure more information by simply checking CP 2267 on handy Reader Service slip, pages two and three.)

Rubber accelerator recommended for tire compounding

Nobs No. 1 is the name that has been applied to a delayed-action rubber accelerator announced by the Calco Chemical Division of the American Cyanamid Company.

Product is reported to require no special handling in application, and is said to afford excellent results in reinforcing furnace blacks in tire compounding.

(Product of the Calco Chemical Division of the American Cyanamid Company, Bound Brook, N. J. . . . or for more information check CP 2268 on handy Reader Service slip, pages 2 and 3.)

For more information on product at right, specify CP 2269 . . . see information request blank between pages 2 - 3.

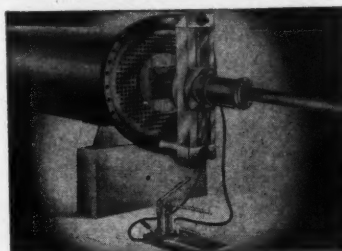
PROCESS EQUIPMENT NEWS

PUBLISHED BY FABRICATED PRODUCTS DIVISION, THE M. W. KELLOGG COMPANY

JULY 1953

Exchanger Shops Altered to Handle Increased Demands of Chemical Industry . . .

For many years, Kellogg's Exchanger Fabricating Shops in Jersey City concentrated on supplying exchangers for Kellogg's many refinery construction jobs and for making critical exchangers for specific outside customers. However, during World War II the facilities were expanded to produce exchangers for a host of marine and general chemical applications, as well as to handle business from other contractors. Since then this general demand has continued to increase . . . and the Shops have just been rearranged to insure prompt deliveries.



Hydro-Ejector Operates in Number of Refineries

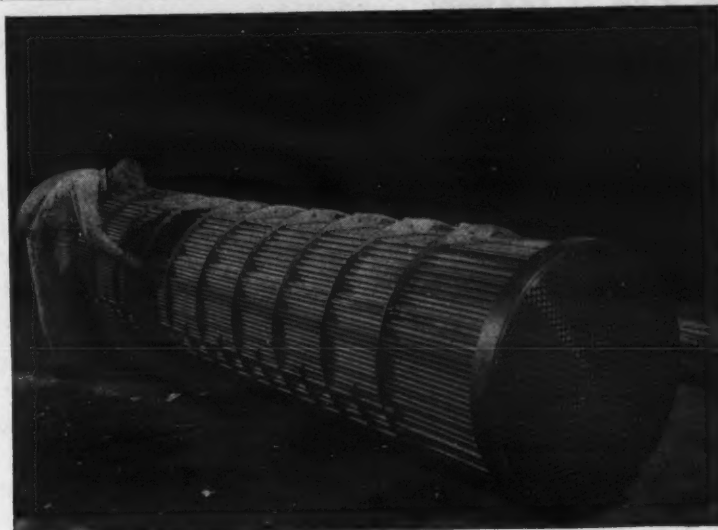
Shown here is the new Kellogg portable Hydro-ejector now in use by a number of refiners and chemical plant operators. The Hydro-ejector removes and inserts the largest bundles with ease . . . eliminates costly steel work to support conventional methods.

FABRICATED PRODUCTS DIVISION

M. W. KELLOGG



PULLMAN



Nearly 200 Stainless Exchangers Completed in Less Than 18 Months

This stainless steel tube bundle, being inspected prior to insertion in its stainless-clad shell, is one of 187 such exchangers recently completed by Kellogg for a huge new chemical plant. The last unit was shipped less than 18 months after the order was received.

While there were minor varia-

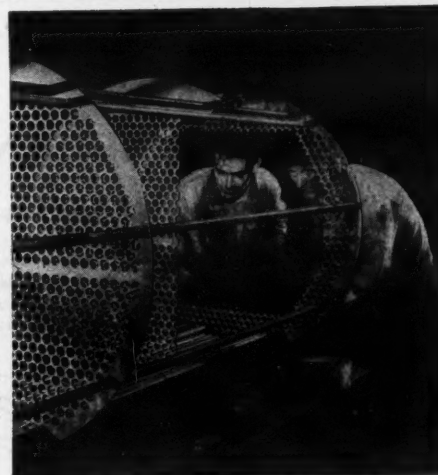
tions in designs, the illustrated unit is typical of the exchangers involved. Carrying twenty foot long tubes and measuring almost 48 inches in diameter, it will handle highly corrosive materials. The tubes are of type 316 stainless and the tube sheets and baffles are of type 304. The shell is stainless-clad.

Condenser Bundles Prove Precision Line-Up of Tube Sheets and Baffles Essential

Undesirable stresses can readily be built into any exchanger during fabrication if tubes do not slide through baffles and into tube sheets with ease.

Only with precision line-up prior to inserting tubes is it possible to insure that the tubes will enter the bundle without use of excessive force.

Kellogg's close tolerance machining of tube holes and painstaking line-up make the insertion of tubes a relatively easy task in the fabrication of this propane condenser bundle. When complete it will contain 889 admiralty tubes. Baffles are of naval brass and approximately 33" in diameter.



EXCHANGERS



THIN WALL ALLOY PIPING



CLAD STEEL VESSELS



CONDENSERS



FRACTIONATING TOWERS



PRESSURE PIPING



DIGESTORS



COOLERS

Heyden

PENTEK®

Covers a wide
range of
coatings...

How many different coating resins do you make? It's a sale but you can use Heyden PENTEK (polymerized, technical) particularly as a new material for most of them. And the high quality of the material, plus its inherent advantages, will carry through to the finished paint, varnish or lacquer.

PENTEK has long been a preferred material for many oil alkyds, synthetic drying oils, resin emulsions and in situ varnishes, and it is now finding wider use in medium and short oil vehicles, baking alkyds, plasticizing alkyds, and special types of products.

Consider PENTEK as the polyol for your resins—old and new. Its dependability and proved performance are based on years of experience in meeting the exacting requirements of the surface coating industries.

PENTEK is packed in strong multi-wall paper bags, 80 lbs. net—easy to store and convenient to use. Technical facts and samples are mailed promptly on request.



HEYDEN CHEMICAL CORPORATION
342 Madison Avenue, New York 17, N.Y.

CHICAGO • PHILADELPHIA • SAN FRANCISCO • DETROIT • PROVIDENCE

Benzaldehyde • Benzoates • Benzyl Chloride • Bromides • Chlorinated Aromatics • Creosotes
Formaldehyde • Formic Acid • Glycerophosphates • Guaiacols • Hexamethylenetetramine • Medicinal Colloids
Methylene Disalicylic Acid • Neomycin • Paraformaldehyde • Parahydroxybenzoates • Penicillin
Pentaerythritols • Propyl Gallate • Resorcinol • Salicylates • Salicylic Acid • Streptomycin



MATERIALS

Offer plasticizer at low price in quantity

Uses: Plasticizer for polymerization reactions in general, and specifically with vinyl chloride.

Description: Manufacturer's dibutyl maleate is being offered in tank car quantities at a few cents less than last reported market quotation. With mol wt of 228 and weighing 8.3 lb/gal, product has following specifications:

Sp gr, 25/25°C	0.989 ± 0.005
Ester content, % min	96
Acidity, as % max	
acetic acid	0.02
Color APHA, max	100
Moisture, % max	0.1
Ash, % max	0.01
Boiling range @ mm, %	
95-100°C	5
100-115°C	95
above 115°C	none

(Available from Dewey and Almy Chemical Co., Organic Chemicals Div., Dept. CP, 62 Whittemore Ave., Cambridge 40, Mass. . . or for more information check CP 2270 on handy Reader Service slip, pages 2 and 3.)

Step up production of CH₃- & C₂H₅- vinyl ethers...

prices are slashed; commercial production next

Semi-commercial scale production is responsible for recent slashes in prices of maker's methyl vinyl ether and ethyl vinyl ether. Previous prices were based upon developmental production; still further slashes are anticipated when commercial production is achieved.

These high-pressure acetylene derivatives are reported to be useful chemical intermediates, especially as copolymerization components. Numerous polymeric materials with interesting properties have been prepared from them.

(Products of the General Aniline & Film Corporation, Dept. CP, 435 Hudson Street, New York 17, New York . . . or for more information check CP 2271 on handy form, pages 2 and 3.)

For more information on product at left, specify CP 2272 . . . see information request blank between pages 2 - 3.

**Initiate production of
USDA's mothproofing
compound — EQ-53**

The new mothproofing compound — known as EQ-53 — developed by the U. S. Department of Agriculture will be produced by the Rohm & Haas Company. Product will be of interest to woolen manufacturers who wish to protect fabrics or finished good against moths during storage.

EQ-53 is an emulsion concentrate containing DDT, maker's emulsifier (Titron X-100), and a hydrocarbon solvent. As a mothproofing treatment, it is said to provide exceptional protection to woollens and worsteds during storage, although the treatment is not claimed to be durable through washing and dry cleaning.

(Rohm & Haas Company, Dept. CP, Washington Square, Philadelphia, Pennsylvania . . . or for more information check CP 2273 on handy form, pages 2 and 3.)

**Offer casein stabilizer
in dry form to assure
uniform lots . . .**

promotes good flow and yield of latex emulsion paints; enhances viscosity and brushability

Uses: Casein stabilizer developed especially for use in latex emulsion paint formulations.

Features: Offered in dry form, thus assuring uniform lots. Maker reports that product promotes good flow and latex emulsion yield. In addition, it is easily soluble at point of use, provides improved viscosity and brushability, and helps prevent hardening of paint pigments.

Description: PMX Special Casein is the designation being applied to product.

(Samples are available from the Borden Company, Chemical Division, 350 Madison Avenue, New York 17, New York . . . or for more information check CP 2274 on handy form, pages 2 and 3.)

**Offer 3 derivatives
of naphthalene**

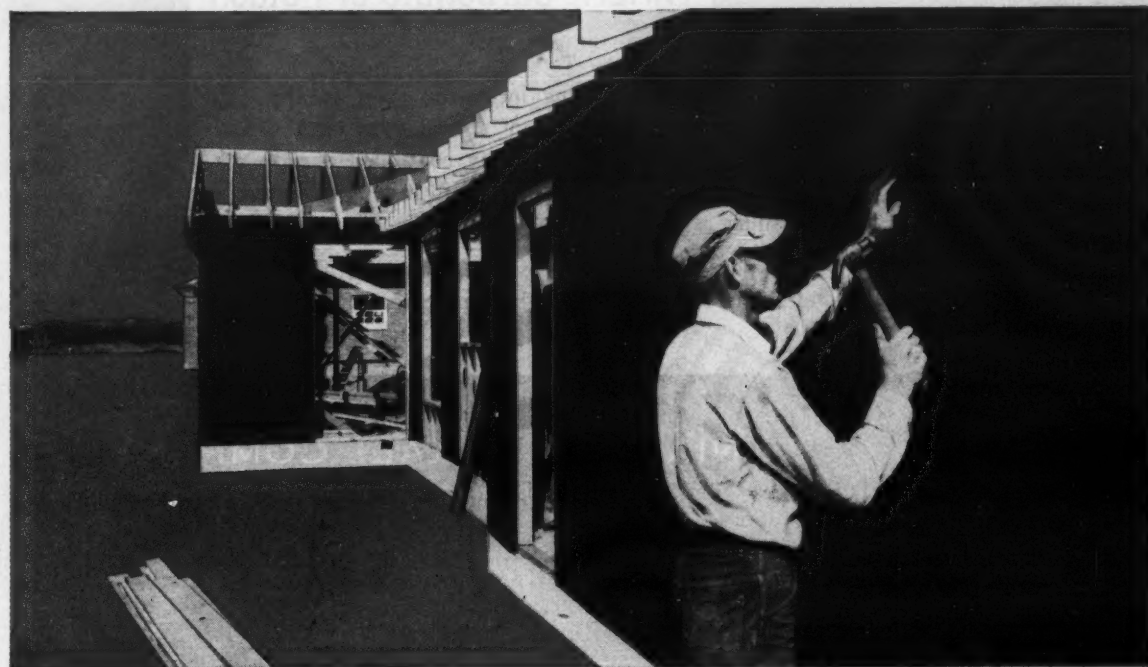
Research and development quantities of three new naphthalene derivatives have been currently announced. Products are seen as useful building blocks in organic syntheses. All are technical grades, although they could be produced as pure grades should the demand arise.

Alpha-naphthaldehyde, alpha-naphthyl carbinol, and alpha-naphthoic acid are the derivatives available. Utility is suggested in the following fields: perfume, rubber, plasticizer, drug, insecticide, oil and gas additives, and paint.

(Products of the Raymond C. Crippen Research and Development Laboratories, Dept. CP, 1138 East North Avenue, Baltimore 2, Maryland . . . or for more information check CP 2275 on handy form, pages 2 and 3.)

DOWICIDE PRESERVATIVES ADD LIFE TO INSULATING BOARD

Manufacturers of cellulosic materials control rot and termite damage using DOW industrial preservatives



The Dow Chemical Company
Department DP-37
Midland, Michigan

Please send me detailed information on
DOWICIDE PRESERVATIVES.

Name _____

Title _____

Company _____

Address _____

City _____ State _____

Manufacturers of well-known brands of exterior sheathing board are getting positive, long-lasting mold, bacteria and termite control using a DOWICIDE® PRESERVATIVE. The positive protective action of the DOWICIDES gives much longer life to this popular building and insulating material. They keep it free from rot and mold under the most extreme moisture and temperature variations.

There are *fourteen* DOWICIDE PRESERVATIVES, each designed for a specific mold and bacteria problem. They are being used extensively in the textile, leather, latex paint, paper and many other industries.

Whether you are developing a new product or changing an old one, DOWICIDE PRESERVATIVES may contribute to its manufacturing and sales success.

Call upon Dow for a solution to your mold and bacteria problems. Write today for detailed information about DOWICIDE PRESERVATIVES. THE DOW CHEMICAL COMPANY, Midland, Michigan.

you can depend on **DOW CHEMICALS**

DOW

When inquiring check 2276 on handy form, pgs. 2-3

NEW LIGHT ON AN OLD SUBJECT*

Bringing new light to bear on the varied uses of

its products is part of Niagara's service to industry.

NIALK® Carbonate of Potash

This potash salt is finding increasing favor in the development and production of special dyes for the textile industry, since its carefully controlled purity and quality are particularly helpful in achieving and maintaining a true color.

Quality plus cooperation keeps NIALK products at the forefront in research and product improvement.

NIAGARA ALKALI COMPANY

60 East 42nd Street, New York 17, New York



NIALK LIQUID CHLORINE NIALK CAUSTIC POTASH

NIALK CARBONATE OF POTASH NIALK PARADICHLOROBENZENE

NIALK CAUSTIC SODA NIALK TRICHLOROETHYLENE

NIAGATHAL® (TETRACHLORO PHTHALIC ANHYDRIDE)



MATERIALS

Optical fabric bleach may be applied with alkali . . .

white fabrics are not yellowed by such treatment

Uses: Optical whitening agent designed for use with nylon, wool and other fine fabrics.

Features: Can be applied from an *alkaline* detergent or soap to the fabrics to be whitened, without causing yellowish discoloration. Being a direct-type dyestuff, the agent readily exhausts from very dilute solutions. Has ability to be retained on fabric in minute amounts.

Description: Hiltamine Arctic White N increases apparent whiteness of white fabrics, and brings out brilliance of colored fabrics, especially pastels.

(Manufactured by The Hilton-Davis Chemical Co. Div., Sterling Drug Inc., Dept. CP, 2235 Langdon Farm Rd., Cincinnati 1, Ohio . . . or for more information reader may simply check CP 2277 on convenient Reader Service slip between pages two and three.)

Optically standardizing amino acids

Following amino acid optical isomers are currently available from this manufacturer. All have been optically standardized . . . "O.S."

- Cysteine • HCl • H₂O [C.P.]
- Leucine, methionine free
- Phenylalanine
- d—Phenylalanine
- Serine
- Tryptophan
- Tyrosine
- Alanine
- d—Alanine
- Citrulline
- Methionine
- d—Methionine
- Ornithine • HCl
- Threonine
- d—Threonine
- Valine
- d—Valine

(Products of Schwarz Laboratories, Incorporated, 230 Washington Street, Mount Vernon, New York . . . or for more information check CP 2278 on handy Reader Service slip, pages 2 and 3.)

For more information on product at left, specify CP 2279 . . . see information request blank between pages 2 - 3.

U.S.I. CHEMICAL NEWS

★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★

Change in Cooking Agents Solves Pollution Problem

What is termed by its authors as the "complete answer" to the problem of stream pollution by pulp mill wastes was revealed at a recent technical society meeting. The new process hinges about the use of magnesium bisulfite as the cooking agent in woodpulp production instead of the present calcium bisulfite. In this way, the digester residual liquor (the crux of the present problem) can be satisfactorily evaporated and disposed of by burning. Chemicals can be recovered and used again, and heat from the combustion of the organic matter can be used for the efficient generation of steam and power.

Experiences with a commercial mill set up to study and use the process are said to have definitely established the economic soundness of the idea.

Wounds Show Affinity for S^{35} from Tagged Methionine

Results of recent research with methionine, tagged with radioactive sulfur (S^{35}), are seen as further positive proof that methionine is involved in the healing of wounded tissue. By injecting radioactive methionine into wounded rats, investigators were able to follow the course of the S^{35} through the body. Within five days of injection, they found twice as much radioactive sulfur in regenerating wound tissue as in normal unwounded skin tissue. This concentration continued to increase, with the rate of increase corresponding to the rate at which the wound healed.

Analysis showed most of the radioactive sulfur in the wound tissue to be associated with cystine. In addition, there was more cystine in the wound tissue than in normal tissue. This indicates that scar tissue produced during wound healing is different from normal tissue protein. The experiments showed that most of the sulfur in the regenerating tissue was supplied from the tagged methionine.

Al-Sb New Semiconductor

Scientists recently reported the development of a new low-cost compound of aluminum and antimony which they think may one day compete with germanium and silicon as a semiconductor for transistors, rectifiers, and other electronic devices. The compound is one of a number of combinations of aluminum, gallium, and indium with arsenic and antimony now being investigated for possible uses.

The researchers explain that aluminum-antimony has essentially the same diamond-like structure as silicon and germanium. Work to date has shown that the material can be used to convert light to electrical energy, suggesting its possible use in photo-electric cells. Rectifiers have been made in the laboratory with the material, and transistors are said to be a distinct possibility in the future.

Aroflat Alkyds Found Superior In Controlling Paint Consistency Over All Temperature Changes

Low-Temperature Studies of Viscosity Changes Show Aroflat 3025 And 3050 Unique in Keeping Alkyd Flats Brushable at All Practical Painting Temperatures; Film Properties Also Improved

The solution to an important problem encountered by both manufacturers and users of interior flat paints is seen in data recently made available on viscosity-temperature changes of alkyd-type flat paints and their resin ingredients.

The now common practice of finishing interiors at all seasons of the year, together with the rapid growth in preference for alkyd finishes, has made the relationship between temperature and viscosity in these paints an important consideration. Now, a paint's brushing characteristics and other properties during cold and warm weather conditions are as important to its over-all satisfactory performance as its behavior at normal temperatures.

Consistency Change Factor the Criterion

The most important change that occurs in alkyd flat paints as the temperature drops is an increase in viscosity. If the viscosity changes rapidly with temperature, the paint is said to have a large "consistency change factor." In a cool atmosphere, such a paint becomes thick, ropey, and difficult or impossible to brush without considerable thinning. And thinning, in turn, reduces the non-penetrating and non-ghosting properties (sheen and color uniformity) of the paint. Tempo-

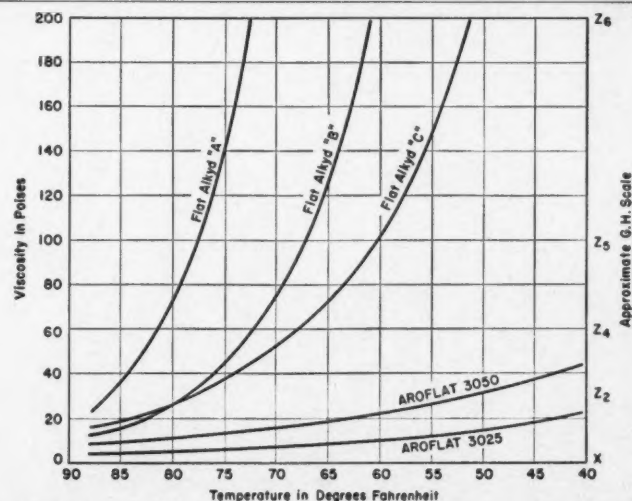
rarily heating the room with space heaters can be resorted to, but practical paint technicians are quick to point out that this does not appreciably heat the wall surfaces. Since paint is applied in a thin film, it cools almost instantaneously on a cold wall, regardless of its temperature in the can. If the paint has a large consistency change factor, it will be almost as difficult to apply as in an unheated room.

AROFLAT Alkyds Furnish the Answer

In pioneering alkyd resins for better flat and semi-gloss wall finishes, U.S.I. laboratories were aware of these viscosity problems and developed AROFLAT alkyds with unique and inherent qualities to overcome them. Data demonstrating the low consistency change factors imparted to paints by these resins was obtained recently in an independent study which paint manufacturers can verify easily in their own laboratories.

Resin Viscosities Compared

In this study, viscosity determinations were made on various resins at temperatures within and beyond the range likely to be encountered in year-around decorating. U.S.I.'s AROFLAT



Curves showing the viscosity behavior of AROFLAT 3025 and 3050, contrasted with that of three conventional-type alkyds, as the temperature decreases from 90° to 40° F. The steep curves of the conventional flat alkyd resins mean that paint formulations containing them will be difficult or impossible to brush in cool weather, or after they have been stored in a cool place.

MORE

U.S.I. CHEMICAL NEWS

CONTINUED

Viscosity Studies

3025 and AROFLAT 3050 were included, as well as a number of conventional alkyd resin solutions of other companies. All of the resins were tested in the form in which they are offered to paint manufacturers.



The point on the right is formulated with AROFLAT 3025, that on the left is a commercial flat containing a conventional alkyd. Both were held at 40° F. prior to this demonstration.

Representative curves showing how the viscosities of these resins changed with temperature are plotted below. The flat curves of the AROFLAT resins over the full temperature range offer a sharp contrast to the steep curves of three conventional alkyds, all of which are incorporated in flat paints now on the market.

Paints Show Same Effect

Further tests showed that the viscosity characteristics of these resins carried over into their respective paint formulations. For example, in a comparison of finished paints, all with consistencies of 80-81 Krebs units at 78° F., the AROFLAT formulations increased to only 86-88 units when the temperature was lowered to 63°. Over the same temperature drop, consistencies of conventional alkyd paints jumped to 140 units or more. Most

New Rub Test Instrument Seen Aiding Ink Research

Rub-resistance, the property of an ink which preserves the sharp, clean appearance of printed matter throughout its useful life, is becoming more and more important, particularly in the packaging field. To fill the need for a standard test of this property, an independent research organization recently announced the development of what it describes as a new and better portable rub tester.

The characteristic motion of the instrument is planetary, i.e., a one and one-half inch square piece of paper or print is rubbed in a circle at 25 rpm over the print under test while the square piece undergoes a slow rotation of its own. Three pressures are available, and the machine can be set to turn off automatically after 1 to 50 cycles. Test conditions are entirely reproducible, directional effects of the stock are averaged, and the instrument eliminates streaks and deep gouges, it is claimed.

authorities agree that paints with consistencies greater than 100 Krebs units are too thick to apply satisfactorily.

Film Properties Also Affected

Tests on the films of these paints at reduced temperatures, as well as at prolonged elevated temperatures, showed that they lose flexibility in a comparable manner to their sharp consistency changes. Films of AROFLAT paints applied to Moresst charts remained flexible at both extremes of temperature while those of conventional paints cracked when the Moresst charts were folded.

AROFLATS Yield Fool-Proof Paints

To the paint manufacturer, the results of these tests mean that with the AROFLATS he can formulate his paints to be much more "fool-proof." U.S.I. technicians point out that spring and autumn seasons bring sufficient temperature changes to produce application difficulties. While the summer ahead supplies temporary relief, now is the time to correct any fundamental faults so that stocks on dealers' shelves will not be a source of future trouble during cool weather.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U. S. I.

Gluing operations in confined spaces and on small objects are said to be easier with a line of adhesives now packaged in collapsible tubes with hypodermic needle tips. Adhesives are nitrocellulose, vinyl, and rubber types. (No. 930)

The flat, non-divergent, knife-like ribbon of air, water, or steam emitted by a new cleaning nozzle makes it suitable for descaling, de-barking wood, cleaning buildings and equipment, and many other uses, according to the manufacturer. (No. 931)

A new chemical resistant lab coat, made of lightweight vinyl fabric, is claimed to be virtually immune to spotting and acid holes, to outlast ordinary lab coats many times, and to retain a neatly tailored appearance through hard wear and launderings. (No. 932)

For stabilizing latex emulsion paints, a new dry-form casein has been announced which dissolves easily at the point of use, provides improved viscosity, brushability, mechanical ability, and helps prevent hardening of paint pigments. (No. 933)

New stainless steel-vinyl plastic coatings, now available in all colors, are said to be impervious to moisture, resistant to most chemicals, quick-drying, and capable of withstanding constant dry heat up to 300° F. (No. 934)

Clear, clean ice flakes, freed of sediment and trapped gases, can now be made directly in the laboratory with a fully automatic machine which produces up to 300 pounds of ice daily. Ice is said to remain flakey for days if kept in an insulated bin. (No. 935)

A new molybdenum-base lubricant in the form of an enamel can be applied "on any type of surface including plastics, glass, and ceramics" to yield a thin, hard coating which is greasy-feeling but clean, the manufacturer states. (No. 936)

Spot determinations of pH to within one-half a unit over the full pH scale can be made, it is claimed, with a series of six new indicator papers with color scales printed on the containers. (No. 937)

A new fire blanket for labs and homes is made of plastic-coated glass cloth, weighs two and one-half pounds, is resistant to acids, alkalis, and most solvents, and stays flexible in below zero temperatures. (No. 938)

New plastic acoustical ceiling tile, lined with fiber glass, is said to be easy to apply by the home owner or industry, to be easily cleaned, and to be stain-, peel-, and chip-proof. (No. 939)

PRODUCTS OF U. S. I.

ALCOHOLS

Amyl Alcohol (Isoamyl Alcohol)
Butanol (Normal-Butyl Alcohol)
Fusel Oil—Refined
Propanol (Normal-Propyl Alcohol)

Ethanol (Ethyl Alcohol)

Specially Denatured—all regular and anhydrous formulas
Completely Denatured—all regular and anhydrous formulas
Pure—190 proof U.S.P., Absolute—200 Proof
Solax*—proprietary solvent—regular and anhydrous

ANTI-FREEZE

Super Pyro* Anti-Freeze
U.S.I. Permanent Anti-Freeze

ETHERS

Ethyl Ether, U.S.P.
Ethyl Ether, Absolute—A.C.S.

ACETONE—A.C.S.

ANSOLS

Ansol* M
Ansol* PR

ACETIC ESTERS

Amyl Acetate—Commercial and High Test
Butyl Acetate
Ethyl Acetate—all grades
Normal-Propyl Acetate

OXALIC ESTERS

Dibutyl Oxalate
Diethyl Oxalate

PHTHALIC ESTERS

Diamyl Phthalate
Dibutyl Phthalate
Diethyl Phthalate

OTHER ESTERS

Diatol*
Diethyl Carbonate
Ethyl Chloroformate

RESINS (Synthetic and Natural)

Arochem*—modified types
Arodure*—urea-formaldehyde resins
Aroflax*—pure phenolics
Aroflat*—for special flat finishes
Aroflint*—room temperature curing phenolic
Aroplax*—alkyds and allied materials
Aroplax*—copolymer modified alkyds
Ester Gums—all types
Natural Resins—all standard grades

INSECTICIDE MATERIALS

Allethrin
CPR Concentrates: Liquid & Dust
Piperonyl Butoxide
Piperonyl Cyclohexane
Pyrethron* Concentrates: Liquid & Dust
Pyrethrum Products: Liquid and Dust
Rotenone Products: Liquid and Dust

INSECTIFUGE MATERIALS

Indalone*
Triple-Mix Repellents

INTERMEDIATES

Acetoacetanilide
Acetoacet-ortho-chloroanilide
Acetoacet-ortho-toluidide
Acetoacet-para-chloroanilide
Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Sodium Oxalacetate

FEED PRODUCTS

Calcium Pantothenate (Feed Grade)
Choline Chloride
Curbay B-G*
DL-Methionine (Feed Grade)
Nicotin, U.S.P.
Riboflavin Concentrates
Special Liquid Curbay*
U.S.I. Vitamin B₁₂ and
Antibiotic Feed Supplements
Vocatone* 40

OTHER PRODUCTS

Acetaldehyde
Caustic Soda
Ethylene
IPC (Isopropyl-N-Phenyl Carbamate)
CIPC
Liquid Chlorine
Metallic Sodium
Methionine (Pharm.)
Nitrocellulose Solns.
Propionaldehyde
Propionic Acid
Sulfuric Acid
Urethan, U.S.P.
*Reg. U.S. Pat. Off.

U.S.I. INDUSTRIAL CHEMICALS CO.

Division of National Distillers Products Corporation

120 BROADWAY, NEW YORK 5, N. Y.

BRANCHES IN ALL PRINCIPAL CITIES

**Containing no surface active,
textile water repellent
resists re-wetting . . .**

wax-alumina product has good emulsion stability,
not subject to foaming

Uses: Impart water repellency to cotton, wool,
rayon, and other synthetic fabrics. May be applied
by standard techniques to finished or unfinished
goods.

Features: High emulsion stability, low dynamic
absorption even after wet mechanical action, and
elimination of foaming are reported as advantages.

Description: Arccopel W-18 is a wax-alumina
type water repellent. Emulsion stability is ob-
tained by virtue of the strong electropositive
charge on the wax particles. Owing to complete
elimination of surface active agents which pro-
mote rewetting, an unusually high degree of re-
pellency is attained.

Product is a thin white fluid at ordinary tempera-
tures; at lower temperatures it forms a reversible
gel which melts again to a thin liquid. It may be
frozen without damage. It dilutes readily with
water to form a stable emulsion of acid pH.

Generally, 3-6% solution is used in treatment;
rainwater, etc., should be impregnated with 5%.

(Product of the American Resinous Chemicals
Corporation, Dept. CP, Peabody, Massachusetts
. . . or for more information check CP 2280 on
handy form, pages 2 and 3.)

Ten organics added to research chemicals

Ten chemicals have recently been added to this man-
ufacturer's line of more than 3500 organic research
chemicals. These are acrylamide . . . 4-amino-2,6-
dimethylpyrimidine . . . 2,5-dimethylfuran . . . 5,5-
dimethyl hydantoin . . . 2,5-diphenyloxazole . . .
formamide . . . malonic acid . . . phthaloyl chloride
2281 on handy form, pages 2 and 3.)

(Products of Eastman Organic Chemicals Depart-
ment, Distillation Products Industries, division of
Eastman Kodak Company, Dept. CP, Rochester 3,
New York . . . or for more information check CP
2281 on handy form, pages 2 and 3.)

A company name and address . . .

at the end of each editorial article makes it easy
for you to follow-up on process-improving ideas you
read about in these columns . . . saves you time.
Write direct or use the handy Reader Service slip.

THE EDITORS

For more information on product at left,
specify CP 2282 . . . see information
request blank between pages 2 and 3.

*For you... complete information
about versatile ELVANOL®
a water soluble, thermoplastic resin*

C O N T E N T S

	Page		Page
Grades and Specifications	5	Viscosity—Concentration	
Major Industrial Uses of		Relationships for Various	
"Elvanol" (Summary)	6	Grades of "Elvanol"	27
USES		Precipitants and Gelling Agents	29
Adhesives and Binders	7	Plasticizers	31
Textiles	8	Extenders	33
Warp Sizing	8	Starch	33
Sizing Filling Yarn	11	Dextrin	33
Nylon Hosiery Yarn	11	Insolubilizers	34
Paper	12	Heat	34
Sizing	12	Protective Coatings	34
High Strength Paper	12	Aldehyde Compounds	34
Increasing Wet Strength	12	Chromium Compounds	35
Glassine Paper	12	Pigments and Dyes	36
Grease Resistant Paper	12	Other Modifications	36
Grades and Equipment	13	PROPERTIES	
Clear Coatings	13	Solubility	37
Pigmented Coatings	14	Oil and Solvent Resistance	39
Molded Products	15	Hygroscopicity	40
Film	17	Impermeability to Gases	40
Emulsions	20	Adhesion	40
Ceramics	22	Emulsifying Properties	40
Photosensitive Coatings	23	Mechanical Properties	41
Miscellaneous—Temporary		Thermal Properties	43
Protective Coatings; Biological,		Light	43
Food, Drug and Cosmetic	24	Electrical Properties	43
MODIFICATIONS		Chemical Properties	43
Solutions	25	Physiological Properties	44

THIS 44-PAGE BOOK fully describes the re-
markable properties of "Elvanol" and its many
profitable applications throughout industry. As
the table of contents indicates, the different

grades of "Elvanol" can be modified to suit a va-
riety of specific uses—in widely separated fields.
Your field may be among them. To get your copy,
just fill out and send in the coupon below.



Better Things for Better Living . . . through Chemistry

MAIL THIS COUPON TODAY

I am interested in the ad- vantages of "Elvanol" for use in: <input type="checkbox"/> Textile Sizes <input type="checkbox"/> Textile Finishes <input type="checkbox"/> Paper Sizes <input type="checkbox"/> Binders <input type="checkbox"/> Oil and Grease Resistant Papers <input type="checkbox"/> Cosmetic Preparations <input type="checkbox"/> Dispersions and Emulsions	E. I. du Pont de Nemours & Co. (Inc.) Electrochemicals Dept., Wilmington 98, Del. Please send me your free book containing full information about Du Pont "Elvanol" polyvinyl alcohols.
	Name _____ Position _____
	Firm _____
	Address _____
	City _____ State _____

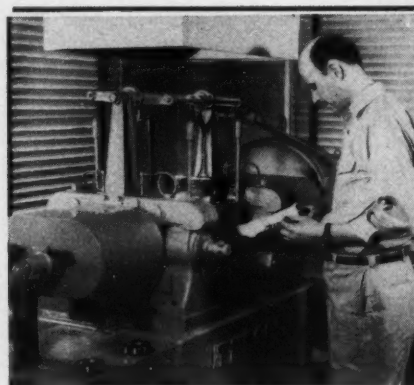
When inquiring check CP 2283 on handy form, pgs. 2-3

Factors Considered from Birth to Marketing of New Chemical Products

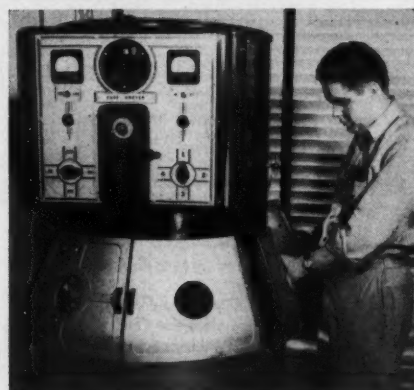
Screening, application studies, and sales service mark three major activities of plasticizers application group at Monsanto Chemical Co.



Shot of corner of laboratories with compression molding machine in foreground and roll mill in center background



Shows operator at roll mill where resin is compounded with plasticizers, stabilizers, pigments, fillers, etc. for further testing



"Fade-Ometer" is used to test light stability of plastic films and sheets

THE most important components in successful formulations of vinyl film and sheeting are the vinyl resin itself, the plasticizers, and the stabilizers. With these ingredients properly balanced, the fillers, pigments and dyes may be added to meet specific demands. Determining the types and concentrations of plasticizers which will give the most economical and efficient compound for a given application is an intricate task. This is in view of the fact that most resin formulations call for a blend of plasticizers, and . . . there are 238 different plasticizers produced by 67 manufacturers to choose from. Scope of the investigative work that goes on in plasticizer selection can be exemplified by the activities of one of the major manufacturers of plasticizers — Monsanto Chemical Co.

Monsanto plasticizers application group has investigated 3000 compounds since its reorganization in 1945. Its activities are three-fold in nature: screening, ap-

plication studies, and sales service.

In the screening process at Monsanto, likely plasticizer compounds are given a preliminary evaluation. About 25-30 compounds — submitted by the company's six divisional research departments or its Central Research Department at Dayton, Ohio — are screened each month. Examined first are the compounds' structure and physical properties. Generally, a good primary plasticizer is an organic ester while the hydrocarbons and various by-products are employed as secondary and extender plasticizers.

If a plasticizer's structure and physical properties qualify it, it is then subjected to a rough economic analysis. Determined are whether the necessary raw materials are in adequate supply and whether it can be made economically.

After this, the plasticizer is made part of a sample formulation which is subjected to ASTM and modified ASTM test



Operator shown at flammability tester. Three factors in flame retardance studies can be determined through its use: ignition time, burning rate, and heat evolved upon burning

procedures to evaluate its performance potential. Its compatibility with base resins is determined and its efficiency, or the amount needed to impart flexibility or other properties, is measured. Other properties determined are: volatility, extraction loss, low temperature flexibility, flammability, and stability.

After the preliminary evaluation work, one of two courses is taken: the compound may be returned to the laboratory to be modified structurally, or it may be of sufficient promise to proceed with intensive application studies.

Latter course consists of finding new uses for both new and old plasticizers, or improvements in the performance of present plasticizing applications. In deciding whether the plasticizer by itself or in combination with other compounds is best suited for electrical insulation, floor tile, sponges, food wrapping, garden hose, non-toxic tubing, etc — more data on the processing characteristics of the plasticizer are developed.

Tests at this juncture add information on: rate of fusion, stain resistance, migration, tensile strength, abrasion resistance, etc, at various concentrations — usually 20, 30, 40 and 50%. These data are passed to the plastics industry which in turn may suggest modifications based on results in plant trials and tests.

Sometimes the effort to adapt a plasticizer to field conditions leads to basic knowledge which is applicable beyond the problem which initiated the study. For example, a number of years ago Monsanto screened an alkyl diaryl phosphate, since trade-marked Santicizer 141, which performed very well. It was compatible with almost all the com-

(Continued on page 44)

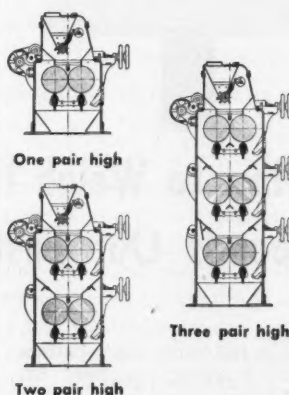


STYLE N

**ROLLER
MILLS**

Gentle

THREE-STAGE MILLING INCREASES YIELD BY MINIMIZING FINES



To meet the varying requirements of the chemical industry, Allis-Chalmers single flow roller mills are also made in one pair high and two pair high types. Milling requirements, of course, dictate the type of mill. Two and three pairs are used when no separation is necessary between stages.

In this Allis-Chalmers roller mill, three progressively finer grindings produce a maximum yield in a single pass. There is no excessive shattering . . . no size-destroying impact. Each grinding is extremely gentle. Granulations are uniform. Fines are kept to a minimum. The necessity of briquetting or pelletizing of fines and the subsequent re-milling is substantially reduced.

How It Works

Three pairs of horizontal rolls are mounted in a vertical line (see drawing). From the input channel, material passes by gravity from one set of rolls to the next — providing three graduated grades of

grinding. Mills are available with rolls of nine and ten-inch diameters in 18 to 42-inch lengths.

Construction Features

Equipped with its own driving unit, the mill can be conveniently located. Roller chain drives on the differential side provide quiet, trouble-free operation. Bearings of the anti-friction type save power. Long wearing, hard surfaced *Circle-Chill* rolls give "bonus" months of profitable milling. An all welded, heavy steel frame affords maximum rigidity and heavy duty service.

For complete information, see your nearby A-C representative or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-4093

Circle-Chill is an Allis-Chalmers trademark.

ALLIS-CHALMERS



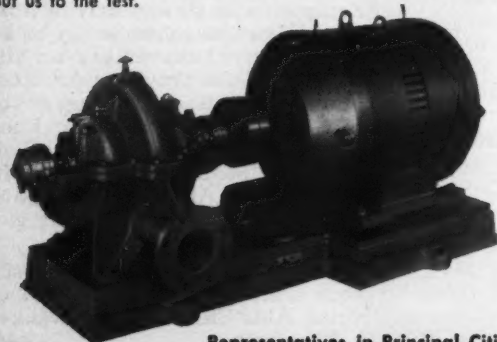
When inquiring check CP 2284 on handy form, pgs. 2-3

"Pumps in our plant? I leave
their selection and installation up
to a WEINMAN PUMP
SPECIALIST"



**Chemical processors
everywhere agree this is sound advice.**

That's because WEINMAN specializes in pumps . . . for more than 50 years has designed, constructed and installed only one product . . . centrifugal pumps. WEINMAN SPECIALISTS know pumps, and know how the proper application of WEINMAN pumps can put your liquid handling operations on a worry-free, profitable basis. WEINMAN PUMP SPECIALISTS recognize that every installation calls for personalized application of basically designed pumps. No matter how challenging the conditions, they can confidently recommend a WEINMAN pump that will meet your requirements. Prove it? Certainly! Write, wire or call and put us to the test.

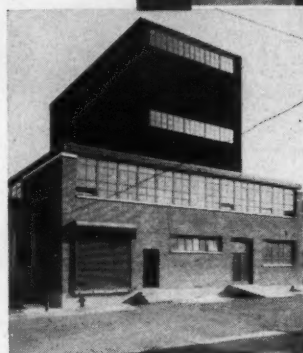


Representatives in Principal Cities

Built by Centrifugal Specialists
The WEINMAN Pump Mfg. Co.

294 SPRUCE STREET • COLUMBUS 8 • OHIO

ideas



Technicians in the plant at work on
modification of a control system

\$150,000 test center which houses weigh-
ing and materials handling equipment
at Clifton, New Jersey

Continuous and batch weighing equip-
ment is selected, designed, and devel-
oped in this year-old test center

"How to Weigh It" Lab Rounds Out First Year of Work

SINCE May of 1952 a test center for selection and development of weighing equipment has been in operation at Clifton, New Jersey. This \$150,000 plant employs more weighing and materials handling equipment than are needed in many plants several times its size. Two bucket elevators, for example, have capacities of 50 and 25 cubic feet per minute. Used with multiple storage silos at the upper level of the plant they can provide continuous feed rates up to a ton a minute when needed for testing even the largest continuous and batch weighing systems.

This test center was brought into existence to provide answers that could not be found on paper nor at a customer's plant where production might be interfered with. Typical of the problems it has solved is the development of an all-purpose automatic scale handling a wide variety of animal feeds including molasses feeds with high accuracy. Though a variety of equipment was available for work on this problem, experiments at the test center proved that slight modification of a standard scale would meet job requirements for this difficult operation. Another function of the laboratory is to test stand-

When inquiring check CP 2285 on handy form, pgs. 2-3

ard equipment under various conditions of feed and production requirements. In line with this, a variety of feeding equipment is used — screw conveyors, bins, gravity chutes, and enclosed scraper-type conveyors. Some work has also been done in developing the mechanical vibrating feeder at the laboratory.

Scores of weighing problems have been brought to the lab for solution, and in each case the design of the best equipment has been determined or standard equipment modified to meet requirements. The laboratory is especially helpful in cases like this (where problem involves new approaches) since it permits the customer to witness specification tests and, in some cases, tests on alternate systems. In any case, laboratory is set up to provide ample data on rates, accuracy, and special problems such as dust, abrasion, explosion hazards, etc.

As an outgrowth of work at the laboratory, its directors are looking for suggestions from industry groups who have common problems which might be solved by development work of this sort. While not the primary intent of the test center, it can be used nicely in developing new equipment to meet broad problems of this type. In fact, this laboratory has shared in work on projects like pneumatically operated bag holders, inexpensive continuous belt weighing machines, and master control systems. This center is open for inspection by people with a legitimate interest in the work being done there.

(Clifton Test Center is maintained by Richardson Scale Co., Dept. CP, Clifton, N. J.)

**LP gas stored 2000 ft down
is ready for use in winter
when demand is high . . .**

huge natural salt deposit offers convenient storage for large amounts of LPG products. As a result of field tests where a 2,100,000-gal capacity cavity was washed out of a salt formation, a major petroleum refiner is currently preparing similar storage facilities at one of its refinery sites. Three large cavities are being washed out of a natural salt formation at depths ranging from 2000 to 3000 ft below the surface. When completed, each cavity will be large enough to store (under pressure) more than 2,000,000 gal of butane, propane and other LPG products.

It is reported that, in addition to cutting initial investment cost for storage facilities, method also results in lower maintenance costs and higher safety factor. According to available information, initial investment cost of storing gas in impervious salt formations is estimated at only 10 to 20 per cent of the cost of steel tanks built to handle an equivalent pressure.

Injection of saturated brine empties a cavity without increasing its size; in addition, natural temperature in the cavities is between 80 and 85°F and the injection and removal of the product can be accomplished without cooling.

(Information courtesy of Sun Oil Co., Dept. CP, 1608 Walnut St., Philadelphia 3, Pa.)

BASIC SOURCE?

- A GASOLINE PLANT
- AN OIL REFINERY

RAW MATERIALS?

- METHANE
- ETHANE
- PROPANE
- BUTANE
- ISOBUTANE
- METHANE
- ETHANE
- PROPANE
- BUTANE
- ISOBUTANE
- UNSATURATED HYDROCARBONS

FEED STOCKS?

- ACETYLENE
- ETHYLENE
- PROPYLENE
- BUTYLENE
- ISOBUTYLENE

PETROCHEMICALS?

- ETHYL ALCOHOL
- ACETALDEHYDE
- ACETONE
- TRICHLOROETHYLENE
- ETHYLENE GLYCOL
- STYRENE GLYCOL
- ETHYL ALCOHOL
- ETHYL ALCOHOL
- ETHYLENE GLYCOL
- ETHYLENE GLYCOL
- ACETALDEHYDE
- POLYETHYLENE
- STYRENE
- ACETIC ACID
- ETHYLENE GLYCOL
- ACETONE
- GLYCERIN
- METHYL METHACRYLATE
- PROPYLENE GLYCOL
- ALLYL ALCOHOL
- ALLYL CHLORIDE
- ALLYL SULFONATE
- BUTADIENE
- POLYBUTADIENE

PETROCHEMICAL MANUFACTURE

Where do you fit in this petrochemical picture?

Currently engaged in this highly specialized work, Fluor can help determine your potentials in this rapidly expanding industry.

Petrochemicals, the largest new factor in our ever-expanding world of chemicals, now account for nearly one-quarter of all U. S. chemical production. Despite this, it is estimated that only one-half of one percent of all present oil and gas production is being utilized as petrochemical feed stock. This opens up new opportunities for the oil and gas producer and investor.

If you own, operate, or have interests in an oil refinery or a gasoline plant, you should be aware of *your* potential as a supplier of petrochemical raw materials. This is particularly so when it is considered that the increase in value of an end petrochemical product may easily be four or five times greater than that of normal products realized from other hydrocarbon processing operations!

Let Fluor assist you . . .

The proven abilities to design, engineer and construct complete plants and facilities for the petroleum, natural gas and petrochemical industries have established The Fluor Corporation as one of the nation's major engineering and construction organizations.

One call to Fluor will place men with broad and diversified experience in petroleum and chemical engineering technology and economy at your disposal. Let Fluor put these talents and facilities to work for you. You will be sure with Fluor!

BE SURE WITH
FLUOR

THE FLUOR CORPORATION, LTD.
LOS ANGELES 22, CALIFORNIA
FOREIGN: FACTS-FLUOR-PARIS
FLUOR OF CANADA-TORONTO
FLUOR INTERNATIONAL-BEIRUT
HEAD WRIGHTSON-LONDON

ENGINEERS
CONSTRUCTORS
MANUFACTURERS
NEW YORK
CHICAGO
PHILADELPHIA
BOSTON
PITTSBURGH
SAN FRANCISCO
HOUSTON
BIRMINGHAM
TULSA

When inquiring check CP 2286 on handy form, pgs. 2-3



How to brighten dark rooms with just one coat of paint

When you consider labor costs on a job like this, you soon realize that it's only good business to use the best quality paint. Particularly when an aluminum paint formulated to your specific needs may well save you the cost of a second coat.

While Alcoa does not make paint, it's our business to know all about the aluminum pigments that go into the best brands. We supply most of them. Working together, Alcoa technicians and leading paint manufacturers have found ways to combine pigments and vehicles for the utmost protection against the most common industrial paint problems—heat, cold, dirt, moisture, smoke, fumes and corrosive action.

If there's a spot that needs brightening in your plant—or a smokestack, tank, boiler or other equipment that deserves preserving—find out how far a brushful of the *right* aluminum paint will go, *how long it will last*.

Ask your paint supplier about specially formulated aluminum paints made with Alcoa® Albron Pigments. Or tell us

your problems. We'll gladly recommend the correct type of aluminum paint for your job.

For a free copy of our 32-page booklet, *Painting with Aluminum*, just call your local Alcoa sales office or write: Paint Service Bureau, Aluminum Company of America, 1790-G Alcoa Building, Pittsburgh 19, Pennsylvania.

Alcoa 
Aluminum

ALUMINUM COMPANY OF AMERICA

When inquiring check CP 2287 on handy form, pgs. 2-3

New Chemical Products

(Continued from page 41)

mon base resins, of low volatility and extremely efficient. It also imparted excellent flame resistance. But plant trials revealed that under common operating practices, its heat stability left something to be desired. Compounds in which it was used discolored.

What the laboratory did was to undertake a fundamental study of heat stability, also a problem with other phosphate type plasticizers. The heat and light stability system, developed as a result of this study, and which includes a competitive plasticizer as a stabilizer, has become widely accepted by the industry. It, and the use of Santicizer 141 which made it possible, has upgraded vinyl film.

In much the same way, the problem of suitable stabilizers for formulating non-toxic film was attacked. The plasticizers themselves (Monsanto's E-15, B-16 and Santicizer 141) had been approved for this use by the FDA and the Bureau of Animal Industry. But a previously developed stabilizer system had not. In the course of this study it was unexpectedly discovered that a good non-toxic stabilizer system was a combination of zinc and calcium salts. The combination's effectiveness is due to a synergistic action.

The third phase of the laboratory's activities — sales service — is conducted through and with the sales force. It is concerned with lowering costs, and improving products or production methods either for an established or potential customer. A customer may submit compounds recommended by Monsanto along with other formulations for an impartial evaluation of quality and economics.

A recent example of sales service concerned a customer making industrial extrusions (gaskets and welting) from PVC compound. To meet increased demand he decided to expand plant facilities and install additional extruders.

In reviewing his formulations Monsanto suggested certain changes in the plasticizers used. One in particular had poor processing characteristics. Laboratory and plant runs demonstrated that a suggested replacement could increase processing speed 100% while maintaining the excellent surface characteristics and other important properties of the previous formulation. Net result of the re-evaluation of the plasticizer component of the formulation showed that additional space, extruders, and operators were not needed.

(Information on plasticizers application laboratory courtesy of Organic Chemicals Division, Monsanto Chemical Co., Dept. CP, St. Louis 4, Mo. . . . check CP 2288 on form, pages 2 and 3.)

A company name and address . . .

at the end of each editorial article makes it easy for you to follow-up on process-improving ideas you read about in these columns . . . saves you time. Write direct or use the handy Reader Service slip.

THE EDITORS

Technical assistance for protective coatings industries

Establishment of a sales-service laboratory, to provide additional technical assistance to the protective coatings industry, has been announced. Lab will enable expansion of company's present facilities for providing direct technical service to customers on both the manufacture and use of protective coatings based on nitrocellulose, ethyl cellulose, cellulose acetate, and chlorinated rubber.

In addition to providing technical assistance in the laboratory, company's representatives will be available to visit individual plants.

(Announced by Cellulose Products Dept., Hercules Powder Co., Dept. CP, Wilmington, Delaware.)

Determining H_2 with avg. error of 0.2%

The universal microgasometric method is presented in 13-page bulletin for the determination of hydrogen in organic, inorganic, metal-organic compounds, and low melting metals. Basis of the method is the evolution of hydrogen in the sample within a sealed iron capsule and the complete diffusion of the liberated hydrogen through the walls of the capsule into a simple vacuum system.

Procedure is rapid and a complete determination can be made within an hour. Average error on the basis of analysis of 10 different types of compounds is 0.2%, which compares with the standard combustion procedure figure of 0.3%. There are no interferences reported from other elements.

KAPL-P-173 is issued by Knolls Atomic Power Laboratory, operated for the U.S. Atomic Energy Commission by General Electric Co., Dept. CP, Schenectady, N. Y. When inquiring specify CP 2289 on handy form, pages 2 and 3.

For more information on product at right, specify CP 2290 . . . see information request blank between pages 2 - 3.



ABOVE: Vital to the high production maintained by Gunnison Homes, Inc. is this 650-ton hydraulic press used to bond plywood panels into strong, durable wall sections.
LEFT: Handsome, precision built homes, like the Gunnison Coronado pictured here, are built in a matter of hours.

Answers a pressing need for Gunnison Homes, Inc. . . .

● Gunnison Homes, Inc., situated in New Albany, Indiana, is one of the leaders in the field of manufactured homes. Key to continuous production of precision built homes at the New Albany plant is the 650-ton hydraulic press, shown above, which was installed in 1947. This press processes ten plywood panels every cycle by the combination of heat and pressure . . . a tough job and one requiring reliable hydraulic performance to maintain production schedules.

STANOIL Industrial Oil was installed in the press when it was put into operation six years ago. STANOIL has stood the test of severe operation . . . with no evidence of oil deterioration being found during a recent inspection of the hydraulic system. Operation has been efficient. Minimum make-up oil has been needed to

maintain the oil capacity of 450 gallons.

Find how STANOIL can benefit you by discussing this multi-purpose oil with a Standard lubrication specialist. You can contact him by phoning your local Standard Oil office. Or, write: Standard Oil Company, 910 S. Michigan Ave., Chicago 80, Ill.

STANOIL
TRADE MARK
Industrial Oil

STANDARD OIL COMPANY



(Indiana)

What's YOUR problem?



Ralph E. Murnahan, of Standard Oil's Evansville office, is the lubrication specialist who keeps in constant contact with Gunnison Homes to make certain that there is no interruption of operation due to lubrication difficulties.

He is one of many lubrication specialists who make their headquarters in Standard's offices throughout the Midwest. These men have been specially trained in Standard's Lubrication Engineering Schools and, in addition, have a wealth of on-the-job experience.

To obtain the service of the lubrication specialist in your area, you need only call your local Standard Oil office. The lubrication specialist will discuss your lubrication problems with you . . . at no obligation to you, of course. He has a complete line of petroleum products to offer you, including:

SUPERLA Greases—Available in a wide range of consistency grades and in both lime-soap and soda-soap types. SUPERLA Greases cover a wide range of operations. These efficient products are comparable in quality with the highest type of special greases.

STANOLITH Greases—Because these unique lithium soap products possess the heat resistant properties of soda-soap greases and the water resistant properties of lime-soap greases, they offer a solution to lubrication problems caused by the presence of both heat and water.

Measures hydrocarbon gases in air pollution test . . .

method determines as little as three parts of gas in a million parts of air by bomb analysis

As a result of incomplete combustion of fuels from numerous sources, hydrocarbons and other gases are often present in the atmosphere. At least a portion of this pollution is a result of various industrial installations, and in spite of carefully controlled operations, is a problem to be overcome.

A recently developed method allows collection, identification and determination of extremely small amounts of these hydrocarbon gases. Synthetic mixtures containing various saturated and unsaturated hydrocarbons — ranging in volume from 0.08 to 0.31 per cent — were blended with sulfur compounds, carbon monoxide and nitrogen to test efficiency of the method. Results indicated approximately 95 per cent recovery of hydrocarbons containing 3, 4 or 5 carbon atoms while the recovery of ethane was shown to be approximately 60 per cent.

Gaseous hydrocarbons are collected by absorbing them in silica gel, which is kept at a temperature of minus 100°F; they are then desorbed into an evacuated gas sampling bomb and finally analyzed by a mass spectrometer. The method is not intended for quantitative analysis of other components of the atmosphere such as compounds of sulfur, nitrogen and oxides of carbon, and such compounds should therefore be determined separately.

Analysis of a sample of air collected near a refinery still demonstrated ability of method to show presence of hydrocarbons in extremely low concentrations — detected as little as three parts per million in mixture of methane, propane and isopentane.

(Description of method was contained in a report delivered by members of the Esso Laboratories, Linden, N. J., at annual scientific conference of the American Chemical Society's North Jersey Section.)

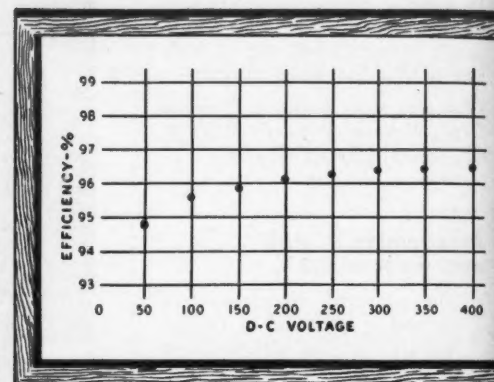
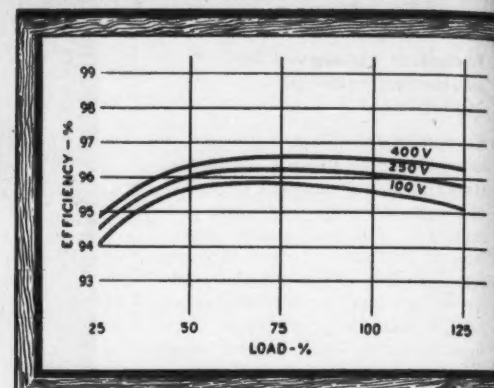
Choice of polyhydric alcohol key to successful making of alkyd resins

Since the initial development of oil-modified alkyds, there have been untold thousands of variations in the type of alkyds prepared — both in material composition and process procedure. Basically, oil-modified alkyds are reaction products of a polybasic acid anhydride such as phthalic anhydride, polyhydric alcohols such as glycerine, and long chain fatty acids such as linoleic, linolenic, oleic, or any of those fatty acids which may be found in ordinary drying oils.

The preparation reaction is a simple one of straightforward esterification, but many variations in the procedure used can measurably affect the characteristics of the end products. The same goes for raw material formulation. A few slight changes in the choice of raw materials will sometimes cause drastic differences in the overall performance of alkyds for specific uses. Raw materials which can normally

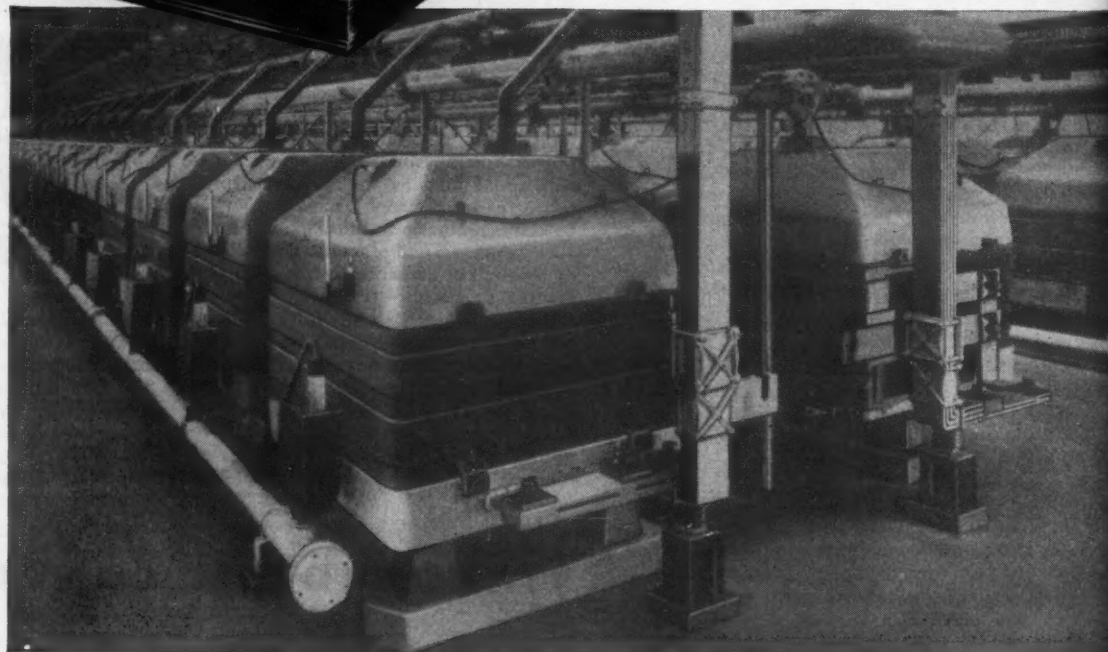
Get more DC from the AC you buy

converting with high-efficiency
I-T-E Mechanical Rectifiers



On cell lines like this—

or for heavy motor loads, metal refining, and other heavy current-using processes.



How much are you paying for lost power?

A substantial amount, probably, if you're converting AC to DC at low efficiency.

The two I-T-E Mechanical Rectifier efficiency curves, left, suggest substantial savings on power costs. 94% to 96% conversion efficiency is realized at any operating voltage, whether it's 50 volts or 400 volts. This same high efficiency is maintained from 25% to 125% of rated load current. And that's over-all efficiency—from a-c line to d-c bus.

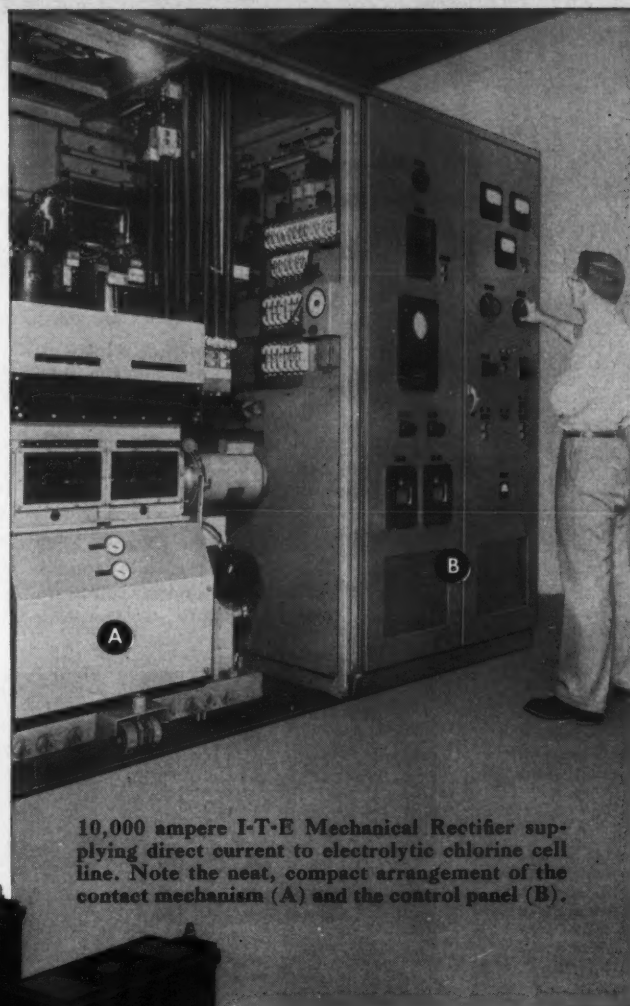
In short, by converting with high-efficiency I-T-E Mechanical Rectifiers, plants can get up to 96 kwhr of direct current power for every 100 kwhr of alternating current they buy

Increased efficiency means increased savings

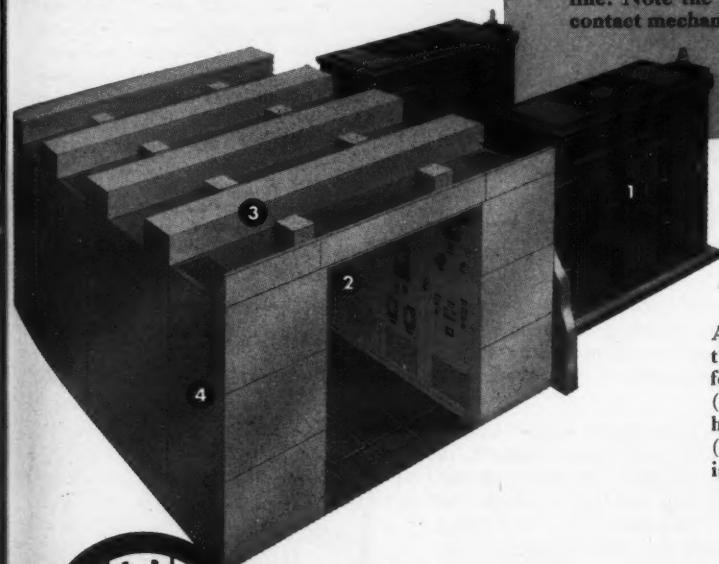
For example: assume a 10,000 kw load, a power rate of ½ cent per kwhr, and continuous operation at 250 volts d-c. Then, for each 1% improvement in efficiency, yearly savings amount to \$3200 or more!

High efficiency of the I-T-E Mechanical Rectifier (and resulting savings) are substantiated by thirty-seven units in service—more than 200,000 amperes of connected load.

For details, send for Bulletin 5205 or your nearby I-T-E Application Engineer.



10,000 ampere I-T-E Mechanical Rectifier supplying direct current to electrolytic chlorine cell line. Note the neat, compact arrangement of the contact mechanism (A) and the control panel (B).



A complete I-T-E Mechanical Rectifier installation includes: transformer and commutating reactor (1), contact mechanism (2), overhead bus (3), and d-c switchgear (4). Compact auxiliary equipment is built into compartments.



MECHANICAL RECTIFIERS

I-T-E CIRCUIT BREAKER CO. • RECTIFIER DIVISION • 19TH AND HAMILTON STS. • PHILADELPHIA 30, PA.

EPD—CANADIAN MFG. AND SALES: EASTERN POWER DEVICES, LTD., TORONTO

When inquiring check CP 2291 on handy form, pgs. 2-3

be varied include: 1) type of polybasic acid, 2) type of fatty acid or oil, and 3) type of polyhydric alcohol.

Third category (type of polyhydric alcohol) is of current concern. Most common of these used in the alkyd field are: glycerol, pentaerythritol, ethylene glycol, sorbitol, and mannitol.

In substituting these polyhydric alcohols for each other in the preparation of resins, care should be exercised in evaluating the final performance of the products obtained.

Products which appear to have identical or superior characteristics on the surface might have some inherent quality which would prove quite troublesome in overall application.

Most of these subtle differences can be worked out if recognized soon enough, but they quite often appear when it is sometimes too late to make adjustments. One of these differences is believed to be the difference in molecular weight distribution obtained by the use of polyols of different basic structure which on the surface may give products with the same main viscosity and general characteristics. These differences might show up later in package stability upon aging.

From an overall standpoint, it is a definite advantage to the industry as a whole to have as many polyhydric alkyds as possible available for practical use both from the standpoint of substitutions when certain of these materials become scarce and the variety which a wide choice of materials lends to the formulation of an end product. The more these various materials are employed the more knowledge will be built up as to their use, which is in itself one of the most important aspects of the entire picture.

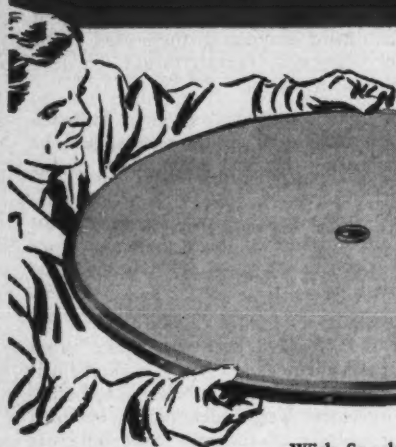
(Summarized from report entitled "The Use of Polyhydric Alcohols in Alkyd Resin Preparation" by Samuel Creselius, Chief of Resins Section, Protective Coatings Branch, Chemical Division, United States Naval Research Laboratory, Washington, District of Columbia. The report was presented at the management symposium conducted by the Atlas Powder Company, Wilmington, Delaware.)

More contact with industry is expected from Federal Trade Commission

A new and more conservative era is dawning at the Federal Trade Commission — an era which will be marked, in all probability, by more conferences with business and somewhat less litigation. A real attempt can be expected toward working closely with the Justice Dept. as one of the ways of avoiding confusion as to the meaning of the fair trade statutes and the Robinson-Patman Act.

As an aid to the new trend, the Commission will get a new member. He is Edward F. Howrey of Virginia, a practicing Washington lawyer and considered an expert in all phases of the laws administered by FTC. Mr. Howrey succeeds John Carson, Michigan independent for a term of 7 years which started last September.

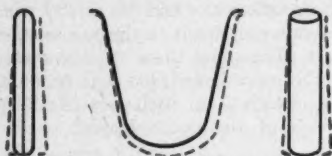
SPARKLER POSITIVE FILTERING makes low pressure filtering possible



A low density even cake is built up with low pressure on a horizontal plate—no pressure is required to hold cake on the plate.

With Sparkler Horizontal Plates the filter aid used to pre-coat the plates can be floated on evenly with low pressure. As the filter aid builds up during filtering, a low density cake is formed that permits low pressure filtering throughout the cycle and at the same time gives a high flow rate.

At no time is there danger of the cake cracking or slipping even with a fluctuation in pressure or with a complete shut-down of filtering. The cake rests on the horizontal plate without strain, held in place by gravity and not dependent on pressure for stability.

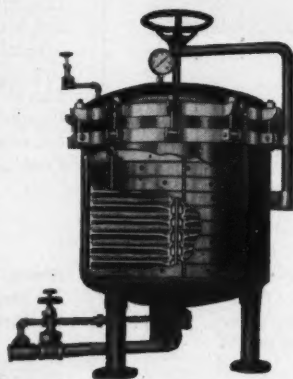


On a vertical plate, bag, or tube high pressure is required to pre-coat and all during the filtering cycle pressure is required to hold the cake in position—result, a dense cake that resists free flow of filtered liquid.

Pre-coating a vertical plate, bag, or tube requires pressure to get the filter aid to adhere to the surface. Frequently a fibre pre-coat must be applied first to obtain a base for holding the filter aid and even with this device the filter aid has a tendency to build up thicker at the bottom than at the top forming an uneven pre-coat that will crack or slip with a variation in pressure.

A filter cake formed under high pressure is dense and resists the free flow of the liquid being filtered with a resulting lower flow rate than can be obtained with a less dense cake built up with low pressure.

This is the Sparkler Horizontal Plate story and the reason why Sparkler filters have been adopted on such a wide scale in the chemical, pharmaceutical, and in many other industries for fine, consistent, never degenerating quality filtering.



Write Mr. Eric Anderson for personal attention to your filtering requirements.

SPARKLER

MANUFACTURING COMPANY
MUNDELEIN, ILL.

ORIGINATORS OF HORIZONTAL PLATE FILTERS

SERVICE REPRESENTATIVES IN PRINCIPAL CITIES

Sparkler International Ltd. Sparkler Western Hemisphere Corp.
Prinsengracht 876 Amsterdam, Holland Mundelein, Ill., U.S.A.
Kamitter & Co., 35 Chitturajan Ave., Calcutta 12, India

MANUFACTURERS OF FINE FILTRATION EQUIPMENT FOR OVER A QUARTER OF A CENTURY

When inquiring check CP 2292 on handy form, pgs. 2-3

IDEAS

Must hold precise RH in sterile air, dehumidifier-filter does it — in 24-hr a day service . . .

relative humidity is kept at 15 per cent for processing of penicillin in filling room

Extremely accurate, constant humidity control must be maintained in the filling room of Schenley Laboratories plant at Lawrenceburg, Ind., where penicillin and other antibiotics are produced.

Because penicillin is moisture sensitive, it is necessary that relative humidity in room (at 78°F) not exceed 15%, in addition to being filtered and kept sterile. Failure to keep this humidity results in powders tending to clog the equipment, causing variations in filling and work stoppages for cleaning. In addition, moisture absorption makes the powder lumpy within the vial, thereby lessening its sales appeal.

To meet the precise humidity control requirements, a Kathabar humidity conditioning unit, continuous and automatic, was installed. (See

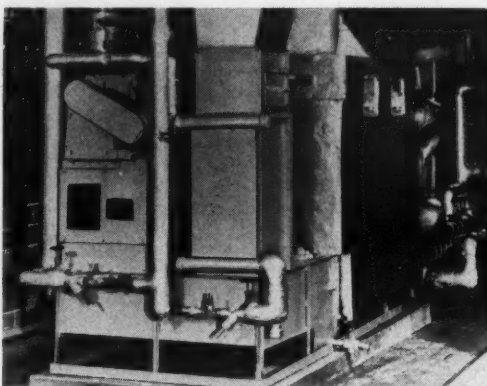


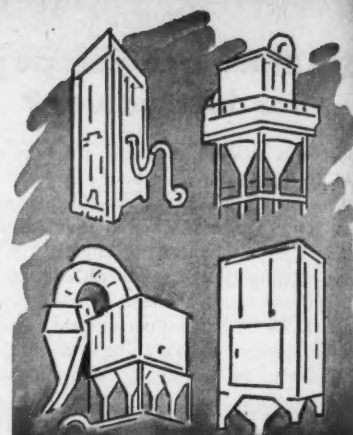
Figure 1—Dehumidification of dry antibiotic filling room is accomplished with unit. Centrally located is air washer section; on left is regenerator

Fig. 1). This compact dehumidifier combines chemical absorption of moisture in the air with mechanical refrigeration to maintain the filling room area at the temperature and the 15 per cent relative humidity.

Air to be treated passes through the washer section of the humidity conditioning unit to contact a spray of the absorbing solution. Within this section are contained cooling coils over which the solution also sprays. Temperature of the cooling medium flowing through the coils determines the amount of moisture to be removed. The company utilizes 52.5 gpm of 5°F brine, since the cooler the absorbing solution, the greater the amount of dehumidification.

At the same time, this 5°F brine cools the air from an entering condition of 80°F to a leaving condition of 23°F. In order to attain a filling room temperature of 78°F, it is necessary to reheat the air to 65°F, using 222 lb/hr of 5 psig steam.

Air entering the unit has 31 gr/lb of moisture, but



Now... FEON
SYNTHETIC FABRICS
for DUST COLLECTORS

For Any Type of Equipment

New FEON fabrics, specially woven of Nylon, Dupont Orlon®, or Dynel for dry separation of corrosive and hot materials, now make possible tremendous savings. Under severe conditions, FEON synthetics last ten to thirty times longer than ordinary filter fabrics. One user reports over \$15,000 saved in one year!

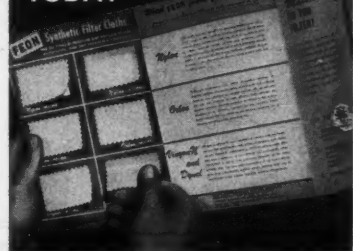
Choice of many weaves—fabricated by FEON for any collector—gives maximum efficiency for a wide range of gases and particle sizes . . . permits handling practically all chemicals . . . at temperatures up to 300 deg. F

For free samples and specific recommendations, send us the facts on your job today.

41-A

New FEON SELECTOR CHART—Containing Samples, Technical Data, Case Histories.

SEND FOR IT TODAY



FILTRATION FABRICS DIVISION
FILTRATION ENGINEERS, INC.

155 Oraton St., Newark 4, N. J.
When inquiring check CP 2293 on handy form, pgs. 2-3

CHEMICAL PROCESSING

is dehumidified to the only 6 gr/lb. This amount of dehumidification is necessary to hold the room at 15 gr/lb, or approximately 15 per cent relative humidity. For the 5000 cfm of air passing through the humidity conditioner, the moisture removed amounts to 232 gal/day. Even though actual packaging of the antibiotics is not occurring the full 24 hr per day, it is necessary to maintain the filling room at the specified conditions at all times.

About 4300 cfm of air from the filling room is returned to the system. Since fresh air, particularly during the summer months, has a higher humidity and temperature level than the air in the room, only 700 cfm fresh air is passed through the dehumidifier in order to keep operating costs, principally for refrigeration, as low as possible.

Within the same conditioning unit is a regenerator section for eliminating from the absorbing solution the moisture picked up in the washer section. Approximately the same amount of low pressure steam is used for this purpose that is used for the afterheat coils.

The company reports minimum maintenance costs when compared to previous systems used. Solid



Figure 2—Extremely pure and odorless low humidity ventilation is necessary in this dry antibiotics filling room. Ultraviolet lights on ceiling and stoppering hoods kill bacteria given off by personnel

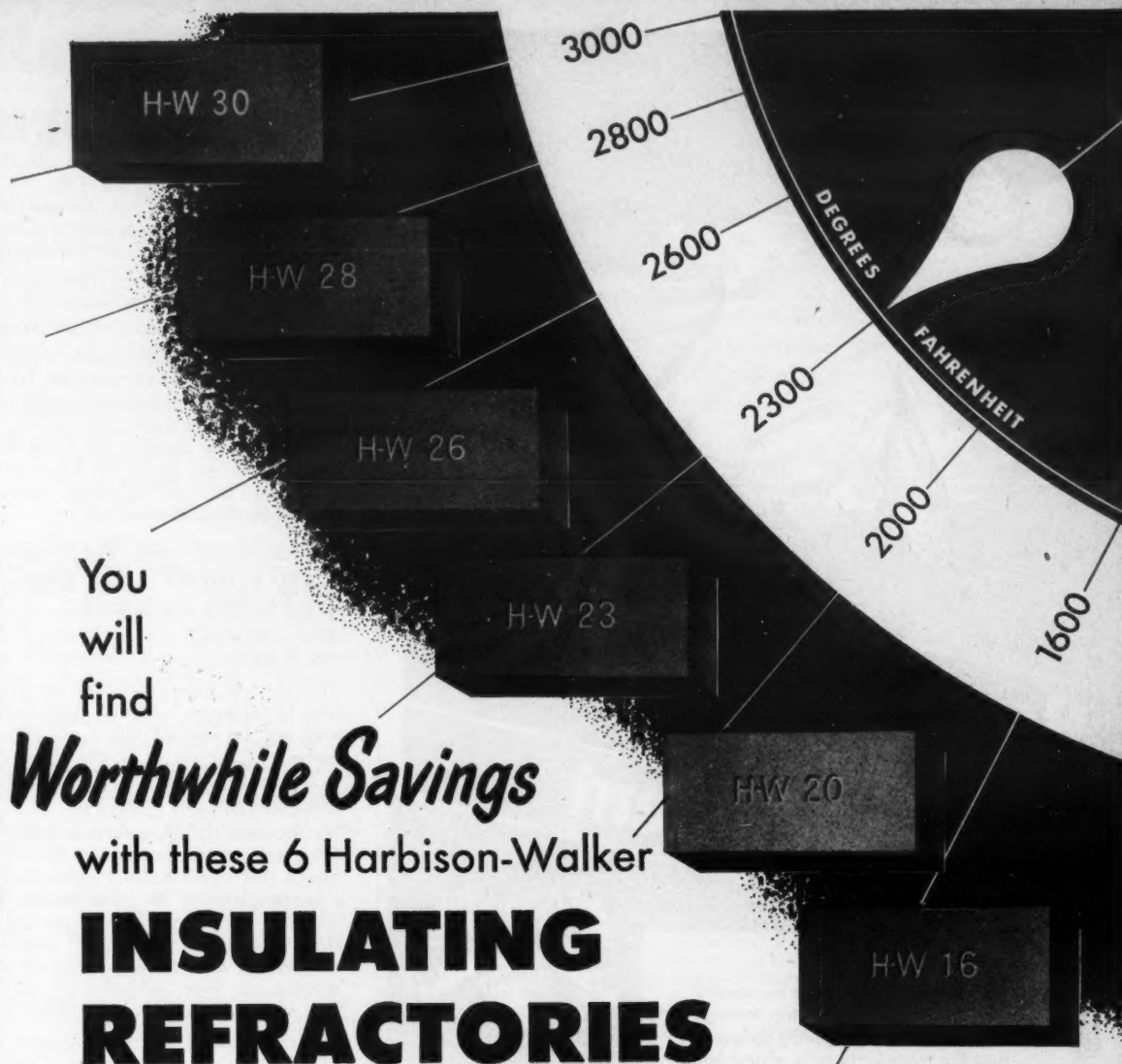
dessicants were employed prior to the present system. Furthermore, the dessicant tended to crumble and be carried over with the air stream into the filling room, violating sterile requirements.

With the present dehumidifier, there has been no "carry-over" of the absorbing medium into the space. Also, the absorbent used in the unit kills all odors which otherwise could contaminate the antibiotic powder.

The problem of frosted coils, through use of a 5°F brine cooling medium, does not arise, as the freezing point of the absorbing solution is below -100°F. This eliminates shutdowns for coil defrosting and subsequent delays in production schedules.

Internal latent load on this 14,080 cu ft room is a rather heavy 30,440 Btu/hr, principally derived from the operating personnel, the dryer, and infiltration.

(Information on the Kathabar unit was supplied through courtesy of Surface Combustion Corporation, Dept. CP, Toledo 1, Ohio.)



You will find Worthwhile Savings with these 6 Harbison-Walker INSULATING REFRACTORIES

Harbison-Walker Engineering Service will help you with the selection of the insulating refractories best suited for your requirements.



The balanced properties of Harbison-Walker Insulating Brick mean superior performance and dependable service. Light weight, essential to high insulating value and low heat storage, has been attained to the greatest degree consistent with the good mechanical strength necessary for handling and for many furnace structures.

Available in six classes, suitable for service in the temperature ranges indicated above, Harbison-Walker Insulating Brick reduce heat losses, save space, absorb noise, conserve fuel.

H-W 85 and H-W 56 CASTABLES are widely used to great advantage in monolithic structures for refractory insulation.

We will gladly send you bulletins containing data and descriptive information about Harbison-Walker Insulating Brick and Insulating Castables.

HARBISON-WALKER REFRACTORIES COMPANY
AND SUBSIDIARIES

World's Largest Producer of Refractories

GENERAL OFFICES

PITTSBURGH 22, PENNSYLVANIA

When inquiring check CP 2294 on handy form, pgs. 2-3



How CONE-DRIVE gears improve your equipment

You can be sure, if the equipment you purchased is operated through Cone-Drive gears or speed reducers, that the manufacturer is giving you "the best."

The secret of Cone-Drive gears and speed reducers is their double enveloping action. Double enveloping—the worm wrapped around the gear, the gear wrapped around the worm—means far greater load capacity for a given gear size, amazing smoothness, greater shock load capacity, far longer life expectancy and trouble-free operation.

Ask if the equipment you buy has double enveloping Cone-Drive gears or speed reducers if you, too, want "the best at the lowest cost."



When inquiring check CP 2295 on handy form, pgs. 2-3

IDEAS

Free-supply economy plans readied

Emergency control legislation can be expected to pass the Congress before June 30. It will give President Eisenhower the authority to allocate materials and provide priorities to assure deliveries of scarce and critical materials for the national defense.

It will, in all probability, omit the current requirement for equitable distribution of scarce materials throughout all segments of the economy.

The Administration has made it plain that it wants to free supplies for the civilian economy as quickly as possible — that it doesn't want to be tied to an arbitrary standard for the distribution of metal which may be in short supply. However, if supplies really get tight — or stay tight as nickel or cobalt — there could be across-the-board controls under standards set by the President.

Devices for expanding the "mobilization base" will be continued. And the Administration will go back to the job of planning mobilization readiness, in fact much of the basic planning has already been done. Now the only job is to call in industry and talk it over.

The right to requisition property for the war effort will be dropped. While price and wage controls will not be spelled out — a 90 day price-wage freeze in the event of an emergency can be expected to be tied to the current bill. That then is the legislative package now expected.

On the control side, a defense materials system takes the place of the Controlled Materials Plan. This means that direct military contractors as well as the manufacturers of "B" products for the military and the AEC use will get help in placing their orders for steel, copper, and aluminum. Makers of "B" products will be allowed to use military ratings to replace metal taken from inventory to fill military orders. The rest of the economy scrambles.

However, special rules will govern the distribution of nickel-bearing stainless steel to everybody, the reason being the continued shortage of nickel.

B of M stresses chemicals in 30 ton/hour plant for coal hydrogenation . . .

plant would make products worth \$13½ million a year, return 10.8% on equity

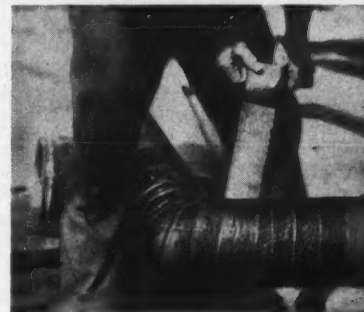
The Bureau of Mines has come up with a proposal for a commercial 30 ton/hour coal hydrogenation plant which will emphasize production of chemicals but which can be readily converted to manufacture of liquid fuels. The proposal assumes financing by 50% borrowed capital (at 4% interest) and 50% equity capital. With a payout time of 5.4 years, return on the equity capital is calculated as 10.8%.

Total cost for such a plant, including chemical recovery and operating capital, would be a little higher than \$38 million (using indexes of spring, 1952). Operating costs would run a little more than \$8½ million a year when coal is \$3.75 per ton delivered, natural gas (for hydrogen production) is 30c a

TO COMBAT CORROSION

Specify TAPECOAT

...the Original Coal Tar Tape Protection for Pipe, Pipe Joints, Couplings and Tanks



TAPECOAT is a coal tar coating with a tar-saturated, close-woven fabric as a carrier for easy application, providing a *natural* protection against corrosion.

TAPECOAT serves as both bond and protection...requires no foreign adhesive.

TAPECOAT resists moisture, acids, alkalis, soil stress, electrolysis, chemical fumes, fly ash, salt water, salt-laden air, barnacles and other severe corrosive and abrasive conditions.

TAPECOAT is clean to handle and easy to apply by spiral or "cigarette" wrapping with the use of a torch to bleed the coating for a bond to the surface. It cuts maintenance and replacement costs.

SIZED TO THE JOB

TAPECOAT comes in rolls of 2", 3", 4", 6", 18" and 24" widths to meet varying requirements.

TAPECOAT has proved its dependability for gas and oil companies, railroads, telephone companies, air lines, ship builders and operators, water and sewage works, chemical and industrial plants, engineers and contractors . . . in combating corrosion both underground and above ground.

PROVED IN SERVICE SINCE 1941

Write for descriptive brochure and prices

The TAPECOAT Company

Originators of Coal Tar Tape Protection

1545 Lyons Street, Evanston, Illinois
When inquiring check CP 2296 on handy form, pgs. 2-3

CHEMICAL PROCESSING

thousand cubic feet, and electricity (purchased) is 0.63c per kw-hr earned rate. A 25-year life is assumed, with straight-line depreciation and no salvage.

The proposed plant would process 30 tons an hour of moisture- and ash-free coal, and is therefore a much smaller plant than those previously proposed by the Bureau of Mines. Two main advantages of the smaller size are: 1) chemicals will be produced in amounts more readily marketable; and 2) purchased power can be used, which eliminates the cost of a power plant. Total employees needed, including sales to wholesale, would be 471. Plant could be built in 24 to 30 months, it is estimated.

Using a feed such as a No. 11 seam coal from western Kentucky, the plant would produce the following main products:

PRODUCT	PRODUCTION (millions/yr)
Phenol, lb	6.72
<i>o</i> -Cresol, lb	2.16
<i>m-p</i> -Cresol, lb	10.05
Xylenols, lb	10.00
Benzene, gal	4.10
Toluene, gal	6.10
Xylene, gal	5.27
Gasoline, gal	22.10
LP-gas, gal	7.92

In addition to the above products, it is known that an almost infinite number of condensed-ring aromatics, nitrogen bases, higher boiling tar acids, and aromatics are present in the various plant streams. Many of these are expected to be commercially desirable as they become identified and means are developed for their economic recovery.

The tar acids, phenol, cresols, and xylenols would be equal in purity to those being made as by-products from coke oven operations. The benzene, toluene, and xylene would be nitration grade and suitable for all chemical purposes. Xylenes would probably be distributed as follows: 15% *o*-xylene, 36% *m*-xylene, 18% *p*-xylene, and 31% ethyl benzene. The isomers could be separated and sold as individual products, but would require additional equipment.

Gasoline produced would be equal in quality to regular grade with the addition of about 1 cc of lead per gallon. Appreciable quantities of premium quality (ethyl) gasoline could be produced by adding more tetraethyl fluid. The high boiling end of the gasoline would be highly aromatic and might be more profitable if sold as a blending component for motor gasoline in conventional refineries in the area. Another possibility would be to produce solvent naphtha from this aromatic stock rather than blend it all back into the gasoline.

The LP-gas made would consist of about two-thirds propane and one-third butane. These products would be segregated and would meet present specifications for liquified-petroleum gases.

Total annual value of the products is estimated at slightly more than \$13½ million.

(Details courtesy of Bureau of Mines, United States Department of the Interior, 4800 Forbes Street, Pittsburgh 13, Pa.)

New wearproofing metal to protect parts against corrosion, erosion and abrasion...

...CARBOLOY GRADE 608 CHROME CARBIDE

Here is a created-metal which in tests has been outstandingly effective for combatting a combination of corrosive, abrasive and erosive agents — Grade 608 CarboLOY Chrome Carbide.

Chrome Carbide (not a cutting tool metal) is fast proving itself suitable for wear-proofing applications. It is being tested for lengthening the life of equipment parts where acids, alkalis, heat, oxidation and the like are most troublesome.

Suggested spots for Chrome Carbide are in

spray nozzles, steam valves and orifices for processing foods, soaps and drugs . . . valve balls, seats and bearings for oil refining . . . core pins for ceramic baking . . . plus countless other applications in many fields.

Perhaps you can use Chrome Carbide to advantage. Check the physical properties of this new metal.

For full details on characteristics, properties, applications and test results, mail coupon today.

PHYSICAL PROPERTIES OF CEMENTED CHROME CARBIDE (GRADE 608)

Composition: 83% Cr₃ C₂
2% WC
15% Ni

Hardness: (nominal) 88R_A

Density: (nominal) 7.0 gm/cm³

Transverse Rupture Strength: 100,000 psi

Abrasion Resistance: Much higher than steel, not as high as tungsten carbide.

Steam Erosion Resistance: Excellent resistance. It will outlast conventional tungsten carbide by 50 to 1.

Coefficient of Expansion: 4.9 x 10⁻⁶ in./in./°F (from 68°—248°F) 5.1 x 10⁻⁶ in./in./°F (from 68°—427°F) 5.3 x 10⁻⁶ in./in./°F (from 68°—608°F) 6.1 x 10⁻⁶ in./in./°F (from 300°—1800°F)

Corrosion Resistance: About 30 times the resistance of 18-8 stainless steel with sulphuric acid as the corrosive agent.

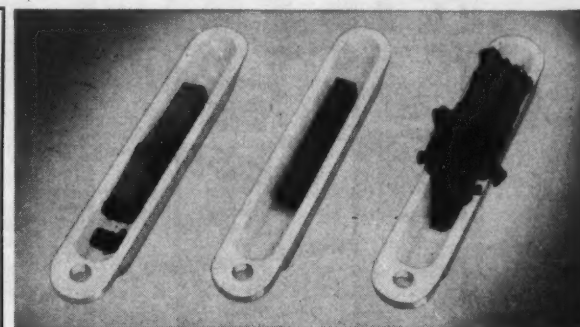
Electrical Conductivity: 2.2% of Copper

Electrical Resistivity: 80 microms/cm/cm²

Magnetic Properties: Non-magnetic

Stability: Complete stability, with no apparent internal strains.

Oxidation Resistance: a) excellent up to 1000°C (1832°F). b) favorable, even beyond 2000°F.



WITHSTANDS GREAT HEAT: After exposure in air at 1850° F. for 24 hours, Grade 608 Chrome Carbide (center) is hardly discolored, while 18-8 stainless steel (left), and tungsten carbide (right) are all but disintegrated. Bars shown above were originally of the same size and shape.



GET CHROME CARBIDE TRY-IT-YOURSELF KIT

Test Chrome Carbide yourself! Kit includes: 3 bars ¼" sq. x 2"; 2 bars ¼" sq. x 1"; 3 bushings 5/16" I.D.; 1 rod, ⅛" dia. x 1" long. Price of kit . . . \$10.75. Kit is adequate for conducting a wide variety of tests in your laboratory.

SEND COUPON FOR NEW FREE TECHNICAL REPORT

CARBOLOY

DEPARTMENT OF GENERAL ELECTRIC COMPANY

"CarboLOY" is the registered trademark of the CarboLOY Department of General Electric Company

CarboLOY Department of General Electric Company
11159 E. 8 Mile Road, Detroit 32, Michigan

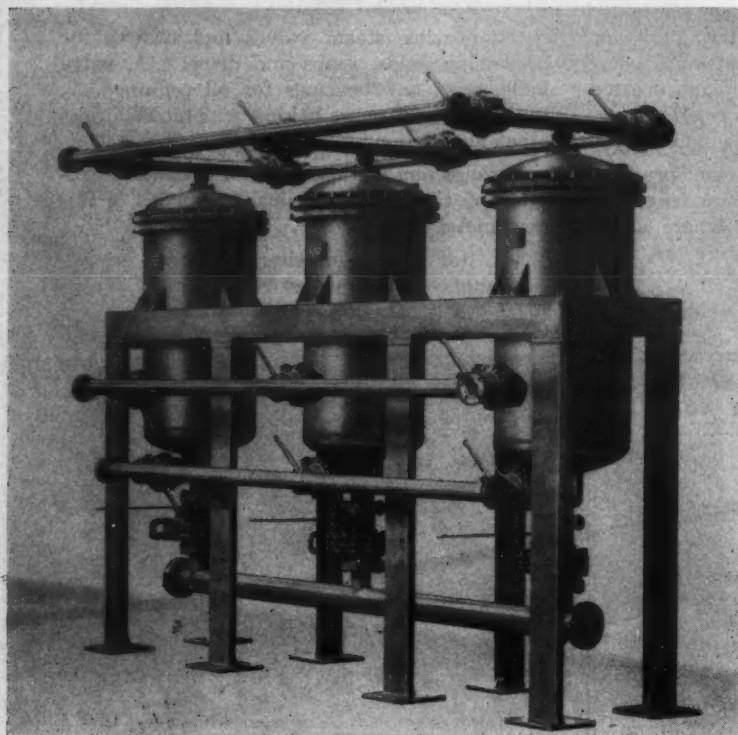
- ☐ Send me Chrome Carbide Technical Report CC-100 free of charge.
☐ Send me Try-It-Yourself Kits of Chrome Carbide at \$10.75 each.

Enclosed is ☐ Check ☐ Money Order ☐ Purchase Order

Send to _____ Position _____
Company _____
Address _____
City _____ Zone _____ State _____

When inquiring check CP 2297 on handy form, pgs. 2-3

ADAMS Molten Sulfur FILTERS



- UPGRADE YOUR RAW SULFUR
- CUT ACID PRODUCTION COSTS

Pioneers in the filtration of molten sulfur, the R. P. Adams Co. now offers the widely tested and approved Poro-Carbon filters in complete, packaged plants. You are invited to write for details in addition to the following salient features.

- ★ Cleaned by backwashing without disassembly
- ★ Filters, piping and valves steam jacketed
- ★ Includes filter aid feed and sulfur pump
- ★ Permanent, inert Poro-Carbon filter media
- ★ Extend catalyst effectiveness in acid production

R. P. ADAMS CO., Inc.
243 E. PARK DRIVE BUFFALO 17, NEW YORK

When inquiring check CP 2298 on handy form, pgs. 2-3

IDEAS

Facilitates studies in nuclear physics

Deuteroparaffin, a target material for use in cyclotrons, Van de Graaff generators, and other nuclear particle accelerators, is now available.

When the material is bombarded with accelerated deuterons it becomes a relatively inexpensive neutron source. Available as a pure white powder, it melts at about 110-120°C and re-solidifies to a hard sheet. The guaranteed D/H ratio is 99, and its formula is $CD_3(CD_2)_nCD_3$ where n is approximately 100.

Deuteroparaffin is expected to facilitate many investigations in nuclear physics, including the production of neutrons and special short-lived isotopes.

(Product of Tracerlab Incorporated, Dept. CP, 130 High Street, Boston 10, Massachusetts . . . or for more information reader may simply check CP 2299 on convenient Reader Service slip between pages two and three.)

Booklet outlines function of research organization

Graphic, 12-page bulletin shows how a commercial research group takes an industrial research project from the idea stage through the pilot plant to a finished product. Six basic policies of organization are outlined, and series of 13 pictures show various steps in completion of a typical project.

"Ideas into Dollars" is issued by The Commonwealth Engineering Co. of Ohio, Dept. CP, 1771 Springfield St., Dayton 3, Ohio. When inquiring specify 2300 on convenient Reader Service slip, pages 2 and 3.

O₂ generators at 320°F below zero insulated by mineral wool

Economical operation of oxygen generators requires a highly efficient insulating material to protect the liquefying and distilling sections, at temperatures as low as 320°F below zero. Engineers at an eastern company specified granulated mineral wool insula-

you save 50%
in TANK HEATING and COOLING with
PLATECOIL
REPLACE PIPE COILS

- ★ You **SAVE 50%** in tank **SPACE**
- ★ You **SAVE up to 50%** in initial **COST**
- ★ You have **50% LESS WEIGHT** to handle
- ★ You **SAVE 50%** in maintenance **LABOR** as plates are changed from outside the tank without dumping solution

... besides all these you get faster heating or cooling. Take advantage of the engineering assistance offered by Kold-Hold to help you with your heat transfer problems.

Send for complete technical manual and descriptive Bulletin No. P54.

PLATECOIL
Division
Tranter Mfg. Inc.
LANSING 4, MICHIGAN

When inquiring check CP 2301 on handy form, pgs. 2-3

**POLYETHYLENE
VINYL
POLYSTYRENE**

**PLASTIC
SCRAP**

**REPROCESSED
SOLD
BOUGHT**

**We offer a steady market for your scrap
and surplus plastic materials**

Tanney-Costello, Inc.
DEALERS • CONVERTORS • GRADERS



868 E. Tallmadge Ave., Akron, Ohio

Phone: Blackstone 4148 • Cable: "COSTAN" AKRON

When inquiring check CP 2302 on handy form, pgs. 2-3

CHEMICAL PROCESSING

IDEAS

tion to be packed between liquefaction and distilling apparatus and shell of each generator's air separator.

Amount of granulated insulation used in each generator varies from 2000 lb in small units to as much as 800,000 lb in a unit for production of tonnage quantities of oxygen.

Granulated form of mineral wool insulation was selected because it is easy to handle and pack into small spaces, and its installed density can be closely controlled. Optimum density specified must be sufficiently low to insure low heat conductivity and yet high enough so that vibration cannot displace insulation to form heat leaks.

Insulation is installed in framework of generator step-by-step as the access panels are secured in place from the bottom up. Coldest sections of air separation equipment are, of course, located nearest center of separator in order to provide maximum insulation thickness.

(Information courtesy of Air Products Incorporated, Department CP, P.O. Box 538, Allentown, Pennsylvania.)

Reviews 6 aspects of atomic energy

Scope of the program, formation of the AEC, expansion of its activities, what it produces and its methods of operation present customers and future role of private enterprise in the atom business, and a look at the future of atomic energy were the six points covered by Capt. J. T. Hayward, USN, Chief, Weapons Research Branch, Division of Military Application, U. S. Atomic Energy Commission, in 18-page copy of talk delivered before the Wings Club in New York City recently.

"Atomic Energy As An Industry" was the title of the speech and copy was issued by the U. S. Atomic Energy Commission, Washington 25, D. C.

For more information on product at right, specify CP 2303 . . . see information request blank between pages 2 - 3.



SYSTEM KEPT CLEAN 7 YEARS. The natural detergency of Circo XXX Heat-Transfer Oil, circulated by these three gear pumps for seven years, has kept the lines and jackets open and clean.



OUT ROLLS THE FELT. Every minute each of these machines impregnates several hundred feet of felt with asphalt. In view of such output, shutdowns would be costly. But Circo XXX helps keep production steady.

COSTLY SHUTDOWNS AVERTED BY CIRCO XXX HEAT-TRANSFER OIL

Trouble lay ahead for Bird and Son, Inc., makers of asphalt roofing and shingles. The heat-transfer oil this company was using broke down under the high temperature and coated the walls of jackets and pipes with an insulating sludge that retarded heat flow. They knew something had to be done or costly shutdowns and frequent oil changes would be the penalty.

Taking the advice of a Sun representative, the plant changed to Circo XXX Heat-Transfer Oil.

Circo's natural detergency loosened the sludge deposits and carried them off to the filters. The system was soon clean and has remained clean ever since. The original charge of Circo shows no signs of deterioration, and has now been serving for seven years. Uninterrupted production, low maintenance costs, and thousands of dollars saved in oil bills—that is the payoff this plant has enjoyed by shifting to Circo XXX. Your plant can probably benefit the same way. Send in the coupon below.



ASPHALT IS KEPT AT 450F in the section where the weather-resistant surface is applied. This high temperature puts a heat-transfer oil to a real test. Circo XXX, after seven years' service, is good as new.

SUN OIL COMPANY, Dept. CP-7 Philadelphia 3, Pa.

I am having trouble that may be due to inadequate heat-transfer oil. I should like to have: ☐ the services of a Sun representative; ☐ a manual describing heat-transfer oils and systems.

Name _____

Title _____

Company _____

Street _____

City _____ Zone _____ State _____

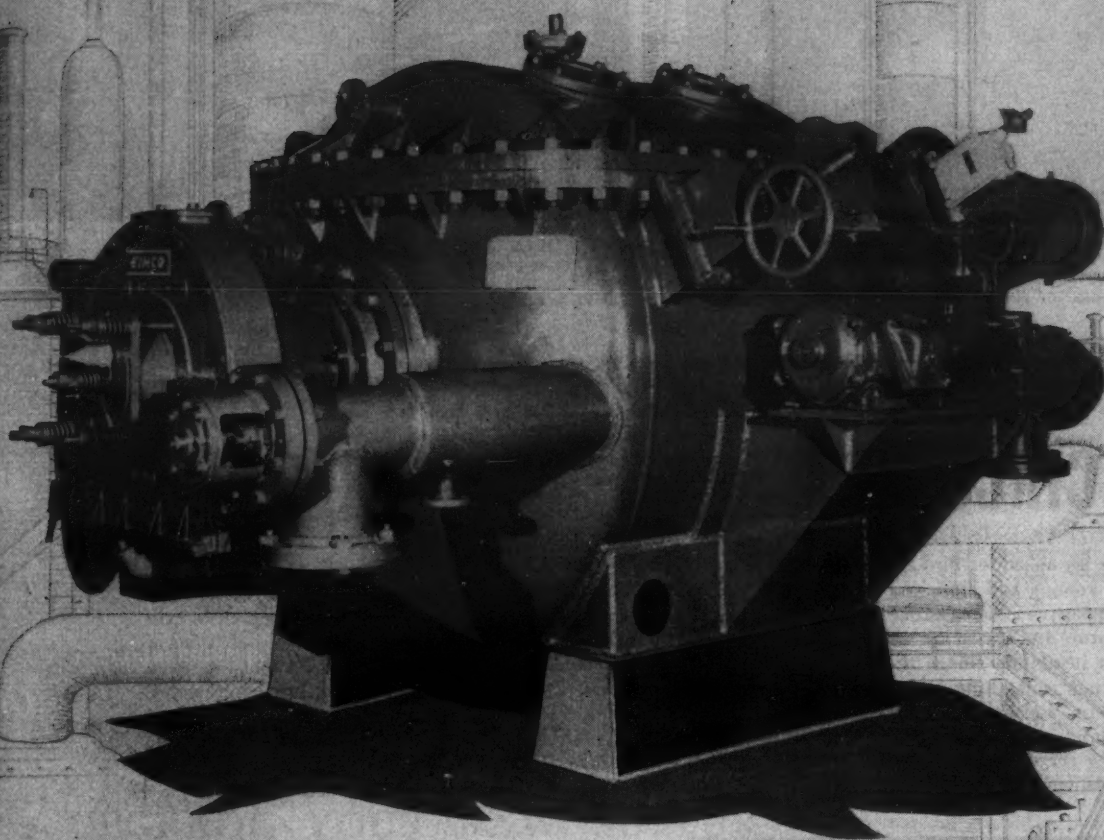
TECHNICAL ASSISTANCE AVAILABLE. Sun's engineers are at your service for consultation on heat-transfer troubles. It will pay you to utilize the broad experience they have gained working with many different industries.

SUN INDUSTRIAL PRODUCTS

SUN OIL COMPANY, PHILADELPHIA 3, PA. • SUN OIL COMPANY, LTD., TORONTO AND MONTREAL



CONTINUOUS PRESSURE FILTERS



Showing one of Eimco's newest pressure filters equipped for dewatering and washing with automatic precision scraper blade advancing mechanism.

Every Eimco Filter for vacuum or pressure operation, or combination of the two, is a custom built machine designed and constructed to meet the specific requirements of your process.

The machine pictured above is another typical example of Eimco custom built filter design. This filter is part of the flow sheet in a plant producing phenol, acetone and alphas-methyl styrene. The purpose of the filter is to remove sodium sulphate crystals and small amounts of water and it was also necessary that the phenol in precoat cake be reduced to .05% washing with crude acetone and separating the strong and weak filtrates.

Eimco's testing and development departments are staffed with experienced chemical and metallurgical engineers whose work with consulting engineering firms

and the engineering departments of many producing companies has resulted in economies in operation and production of their product.

May we have an opportunity to consult with you and quote on your filter requirements?

EIMCO 1458

THE EIMCO CORPORATION

The World's Leading Manufacturer of Vacuum Filtration Equipment
EXECUTIVE OFFICES AND FACTORIES SALT LAKE CITY 10, UTAH, U. S. A.

BRANCH SALES AND SERVICE OFFICES:

NEW YORK, 51-52 SOUTH STREET • CHICAGO, 1319 SOUTH WALLACE STREET
BIRMINGHAM, ALA. 3140 FAYETTE AVE. • DULUTH, MINN. 216 E. SUPERIOR ST.
EL PASO, TEXAS, MILLS BUILDING • BERKELEY, CALIF. 637 CEDAR STREET
KELLOGG, IDAHO, 307 DIVISION ST. • LONDON W. 1, ENGLAND, 190 PICCADILLY

IN FRANCE: SOCIÉTÉ EIMCO, PARIS, FRANCE
IN ENGLAND: EIMCO (GREAT BRITAIN) LTD., LEEDS 12, ENGLAND
IN ITALY: EIMCO ITALIA S.P.A., MILAN, ITALY

IDEAS

Build diving rod into station wagon . . .

boom can lower probe into crevices or over cliffs

A diving rod reportedly more reliable than even a Geiger counter is helping the U.S. in its search for vital uranium deposits. It's a scintillation unit built into a station wagon and with a boom that can lower a probe into earth crevices or over cliff edges — up to 1000 feet, if necessary.

Station wagon is equipped with four-wheel drive which gives the unit a wide range of operation. The instrument itself is claimed to be 10 times more efficient than the Geiger counter in detecting radiation.

(Station wagon is model manufactured by Willys-Overland Motors, Inc., Dept. CP, Toledo, Ohio.)

Chart of 1274 nuclides now available

A total of 1274 different kinds of atoms now known to exist are shown in a new chart prepared by Dr. John R. Stehn of Knolls Atomic Power Laboratory. The chart, which follows essentially similar plans used previously by Dr. Emilio Segre and Dr. G. T. Seaborg of the Univ. of California, is arranged in checkerboard form, with a square for each nuclide or kind of atom.

In the various squares of the chart are given the mass, abundance and other technical data which pertain to nuclide.

Chart of the Nuclides-APH-66C is issued by Dept. CP, General Electric Co., Dept. 2-119, Schenectady, N.Y. When inquiring specify CP 2304 on handy form, pages 2 and 3.

A company name and address . . .

at end of each editorial article makes it easy to follow-up on idea you read about in these columns . . . save you time. Write direct or use the handy Reader Service slip.

THE EDITORS

For more information on product at left, specify CP 2305 . . . see information request blank between pages 2 - 3.

Barometer has built-in "watcher" reading to fractions of millibars . . .

substantial power output is available for control purposes or calibration

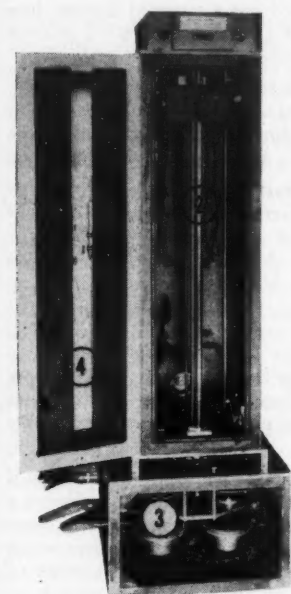
In order to simplify precise calibration of pressure-sensitive instruments, Friez Instrument Division of Bendix Aviation Corporation has built an automatic barometer. This instrument is capable of electrical control based on a vacuum or a barometric pressure, or it can be used for remote indication or calibration of other instruments.

Basically, device consists of a conventional mercury-tube barometer with a sensing device which follows rise and fall of the mercury. Sensing element consists of a light source, collimated beam

and photo-tube. These are placed on opposite sides of the glass mercury-tube. Sensing head is supported by a precision screw drive mechanism. When light can get through the tube to photo-cell (sensing head is above mercury level) the servo motor drives precision screw to pull it down. When no light gets through (sensing head below mercury level) the servo system drives the head up.

Barometer is housed in an insulated, heated cabinet with gasketed, glass paneled door. Hose connections provide for connecting instrument to testing chamber or similar device.

Servo amplifier which drives the motor has two 6L6

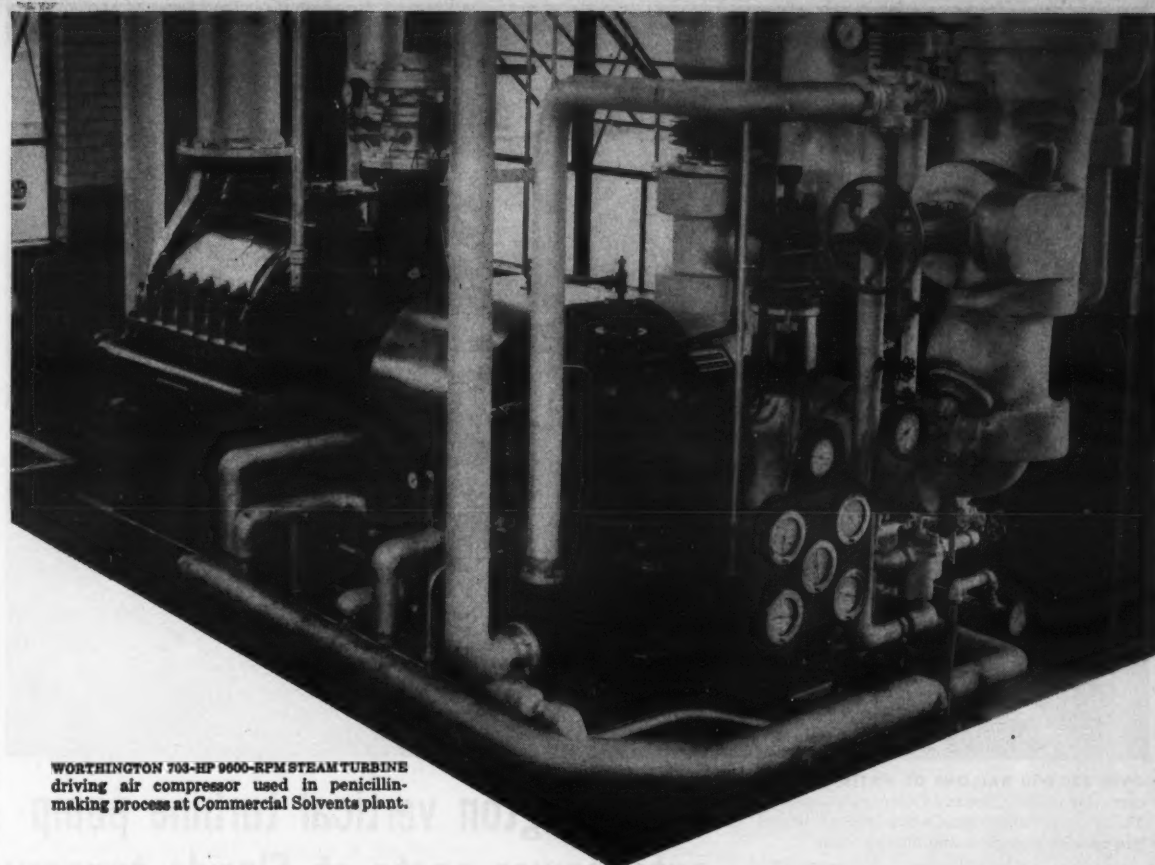


Open cabinet door (4) of instrument shows sensing head (1), mercury tube (2), and driving servo motor (3).

tubes in push-pull as final output — providing about 22 watts of useful power. Instrument is capable of an accuracy of 0.5 millibar, can be read to nearest 0.2 millibar on counter-type indicator near top of cabinet. Two indicator lights provide constant information of action being taken. While response is fast enough to follow fairly rapid pressure changes, hunting is not a problem.

Barometer is not designed for, and will not follow fast pressure transients.

(Automatic Barometer is in calibration service at Bendix-Friez and is not a production model. Similar instruments can be custom designed and built, however, by Friez Instrument Div., Bendix Aviation Corporation, Department CP, 1400 Taylor Avenue, Baltimore, Maryland.)



WORTHINGTON 703-HP 9600-RPM STEAM TURBINE driving air compressor used in penicillin-making process at Commercial Solvents plant.

9600-rpm turbine drives compressor in making penicillin for

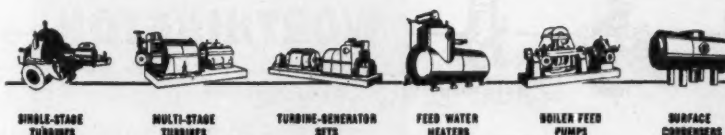
Commercial Solvents Corp.

Two years ago, a Worthington high-speed steam turbine was installed in the Terre Haute, Indiana, penicillin plant of Commercial Solvents Corporation. Its high efficiency and economical steam consumption plus its low maintenance demands have justified that selection many times over.

In addition, use of Worthington high-speed, direct-drive turbines to drive centrifugal compressors or blowers makes possible a broad speed range, elimination of costly speed increasing gears, and adaptability to various governing arrangements for precise control under all operating conditions. Worthington's design flexibility provides you with the *right* type and, size turbine for optimum performance—regardless of your requirements.

Remember, when you're considering turbines for driving compressors, the engineering of the turbine is just as important as the engineering of the compressor. Worthington's long and complete experience in compressor-drive engineering is your assurance of maximum efficiency. Write for Bulletin 1966 to Worthington Corporation, Steam Turbine Division, Wellsville, N. Y.

T-2-19



A GREAT TEAM IN STEAM

WORTHINGTON



Steam Turbines

When inquiring check CP 2306 on handy form, pgs. 2-3



OVER 500,000 GALLONS OF WATER are used every day in the Lakeland Company's tannery. This is the de-hairing area, where hides are being treated with a sulphite and lime solution.

Worthington vertical turbine pump cuts power costs at Florida tannery

Power costs at the Lakeland Tanning Company in Lakeland, Fla., decreased as soon as a Worthington vertical turbine pump was installed.

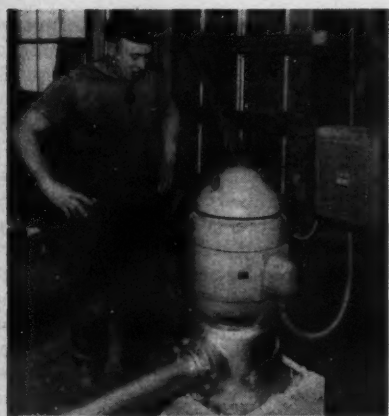
Previously, water was supplied by a pump handling 500 gallons per minute, and driven by a 50-hp motor. Every time the pump started up, every other electrical unit in the plant slowed down or dimmed. The smaller Worthington pump furnishes an adequate water supply and uses only a 15-hp motor.

Here's what H. C. Lutes, owner-president of Lakeland, writes about his Worthington:

"We are well pleased with this pump. It has effected a considerable saving in electricity for us since its installation. No maintenance has been necessary, and this, of course, is a most important factor since our plant would be disabled in case of water failure. To any plant operator desiring trouble-free, dependable service, I would not hesitate to recommend the Worthington."

Reports like this are typical of those received from Worthington users everywhere. Find out how Worthington vertical turbine pumps can save you money. Get in touch with your nearest Worthington district office or write to Worthington Corporation, Vertical Turbine Pump Division, at Succasunna, New Jersey, or Denver, Colorado.

D.3.3



THIS COMPACT WORTHINGTON TURBINE PUMP runs 24 hours a day, 7 days a week, assuring a constant, reliable water supply for the tannery.

Ask for new bulletin W-450-B39



The World's Broadest Line Assures You The Right Pump For Every Job

CONSERVE GROUND WATER; IT IS A VALUABLE RESOURCE AND IS NOT UNLIMITED

When inquiring check CP 2307 on handy form, pgs. 2-3



IDEAS

Combined oil from pressing and solvent extraction has improved quality . . .

cottonseed press cake contains 10% oil which is removed by hexane in 200 ton/day mill

Combined mechanical pressing and solvent extraction is producing a cottonseed oil of higher quality than from straight pressing — at least that is the finding of The Union Oil Mill, Inc., at their mill in West Monroe, La. Three French presses get all but 10% of the oil out of the 200 tons of seeds processed per day, and a Blaw-Knox Rotocel extractor takes most of the rest out with hexane. Pressed oil and solvent-extracted oil are combined at the end of the process.

In the Rotocel, a slow-moving rotor with 18 sector-shaped cells turns inside a vapor-tight vessel above a stationary, inverted cone-shaped, compartmented bottom. Each rotor cell has a screened bottom door to retain the flakes but allow the solvent-oil mixture (miscella) to fall through.

Miscella streams collected in the bottom compartments are pumped continuously through manifolds over the flakes in a direction countercurrent to the rotation of the rotor. Fresh solvent is sprayed on

Partial Analysis of Pressed and Solvent-extracted Meal

Protein	43.25%
Soluble protein	45.23
Nitrogen	6.92
Moisture	6.70
Oil	0.24
Gossypol	0.04

the flakes due to leave the extractor. After proper drainage, the bottom door of each cell falls open, as it reaches the proper point, and the spent flakes discharge.

Before solvent extraction, cake from the presses is ground to about 4 mesh. The Rotocel discharges a miscella which is 20 to 25% hexane to the recovery system. Meal goes to a 5 by 20' desolventizer which is jacketed with 300-psi steam. Solvent content of discharged meal is very low, not high enough to flash. Meal analysis is shown in accompanying table.

A total of 600 to 800 gallons of hexane is continuously in circulation through the extraction and recovery system. Solvent loss is approximately 2 gallons per ton of seed processed.

(Information obtained on visit to The Union Oil Mill, Inc., West Monroe, La.)

Release industrial team reports on power generation using atomic energy . . .

information now available for groups not having study teams in the field

Just recently made available are the declassified versions of reports made to the Atomic Energy Commission by four separate teams of non-governmental industrial representatives who spent a year inside the atomic energy program. Their purpose was to appraise the prospect of private industrial participation in joint production of electric energy and fissionable

material from reactors. Included in the survey was an examination of both technical and economic problems involved in production of electric energy from nuclear reactors for industrial and commercial use. These declassified versions represent only about one-fourth to one-third of the bulk of the classified reports made to the commission.

Four groups were involved in the study: Commonwealth Edison Co. and Public Service Co. of Northern Illinois, Dow Chemical Co. and Detroit Edison Co., Monsanto Chemical Co. and Union Electric Co., and Pacific Gas and Electric Co. and Bechtel Corp. The companies assumed all costs incurred by their field teams. The AEC made literature on reactor technology available to them and made it possible for study group personnel to confer with Commission and contractor scientists and engineers on classified as well as unclassified matters.

Reports call attention to many different reactor designs that might be followed. In fact, each group settled on a different reactor type as holding most promise from the group's point of view. The report of Detroit Edison and Dow Chemical Co. considers the problem in general and economic terms without outlining specific plant designs. The other three reports describe specific designs involving considerable construction detail.

All four groups concur in the belief that dual-purpose reactors are technically feasible and could be operated in such a fashion that the plutonium produced would reduce the cost of power. Conversely, all agree that no reactor could be constructed in the very near future which would be economic on the basis of power generation alone. As a final comment all four groups expressed a willingness and a desire to continue their efforts with more detailed studies, investigations and component development.

Advisory Committee on Industrial Information of the AEC in commenting on the reports states that, from long familiarity with existing plants and thermodynamic cycles, power engineers assume that nuclear power plants will have to operate on the same high-temperature, high-pressure steam cycles that characterize modern fuel-fired plants. The reports indicate that this is not so — at least not in the beginning of nuclear power development. All plans involve the use of conventional steam turbines supplied with steam from heat exchangers which in turn are supplied with heat from the coolant flowing through the nuclear reactors. In only one does the design of these plants involve steam at a pressure point higher than 500 psi or at temperatures ranging above 750° Fahrenheit.

It is suggested, however, that further development of reactor materials may result in those which have both desirable nuclear properties and ability to withstand higher temperature and pressure. Then, it may be possible to take advantage of smaller turbine investment and improved thermal efficiency that come with increasing temperature and pressure.

(Copy of "Reports to the U.S. Atomic Energy Commission on Nuclear Power Reactor Technology" may be obtained by remitting 25c to Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.)

CORROSIVE VAPORS HANDLED BY WORTHINGTON STEAM JET EJECTORS

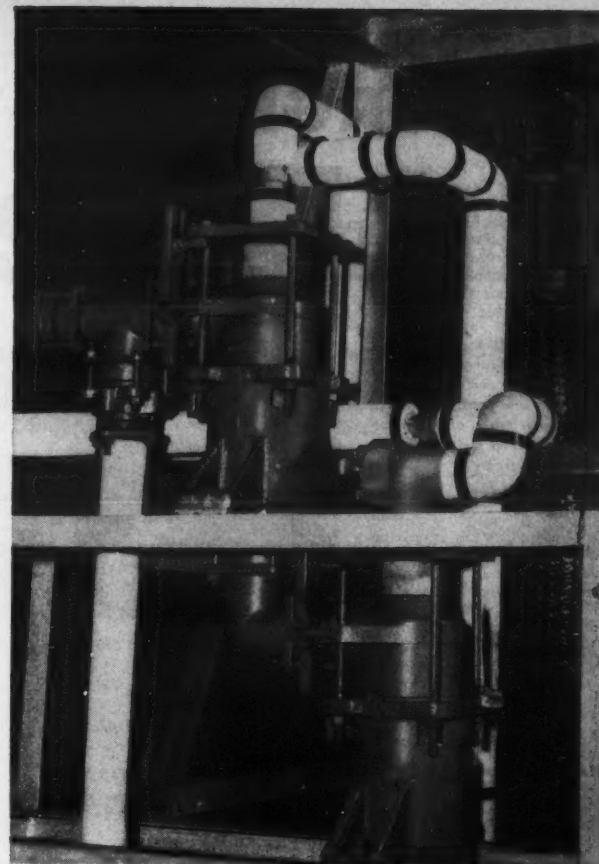
Units used in vacuum process
for manufacture of vitamins

In making synthetic vitamins at the Rahway, N. J., plant of Merck & Co., Inc., large quantities of corrosive vapors must be handled.

Worthington impervious graphite steam jet ejectors have been doing the job for years. And wherever corrosive vapors must be handled in vacuum operation—there you will find Worthington steam jet ejectors in heavy-duty operation.

There's a Worthington ejector for every vacuum requirement—from atmosphere to 50 microns absolute, single and multiple stages, condensing and non-condensing, of stainless, bronze, porcelain, impervious graphite, Worthite, cast iron and steel.

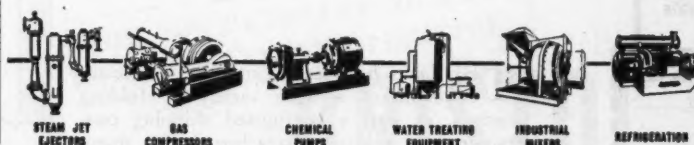
Take advantage of Worthington's years of experience in vacuum systems. Write and tell us about your specific requirements. Worthington Corporation, Steam Power Division, Ejector Section, Harrison, New Jersey.



WORTHINGTON TWO-STAGE IMPERVIOUS GRAPHITE STEAM JET EJECTOR used in synthetic vitamin manufacture at the Merck plant in Rahway, N. J. This unit is one of thirty-eight Worthington ejectors used at the plant.

6 BIG ADVANTAGES OF STEAM JET EJECTORS FOR VACUUM SERVICE

1. LOW INITIAL COST.
2. MINIMUM OPERATING COSTS.
3. NEGLIGIBLE MAINTENANCE COSTS.
4. NO MOVING PARTS.
5. EASY TO OPERATE.
6. AVAILABLE IN ANY MACHINABLE MATERIAL.



When inquiring check CP 2308 on handy form, pgs. 2-3

INSTALL IT! FORGET IT!

THAT'S all you have to do with this Taylor Self-Acting Temperature Controller! Simple, dependable, needs practically no maintenance. Ideal where your process involves no extreme load changes. Where compressed air or electricity aren't available.

For jobs like: wax coating machines, plating and rinsing tanks, bottle and can washers, mixing and cooling kettles, hot water tanks, diesel water jackets, food water systems, crude oil heaters, condenser cooler water in stills, oil field superheaters and others.

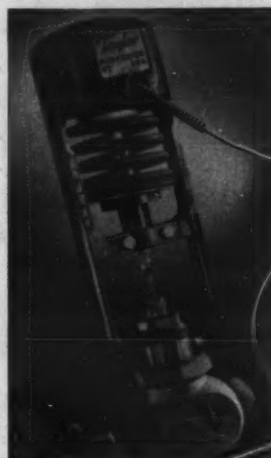
No auxiliary air supply required. Double seated valves available up to 2"; single seated composition disc types up to 1". Numerous standard temperature ranges within 10° to 340°F., and semi-standard temperature ranges within 165° and 610°F. Choice of bulb materials and type of connection.

Ask your Taylor Field Engineer or write for **Catalog 36-B**, Taylor Instrument Companies, Rochester, N. Y., or Toronto, Canada.

Instruments for indicating, recording and controlling temperature, pressure, flow, liquid level, speed, density, load and humidity.

TAYLOR INSTRUMENTS MEAN ACCURACY FIRST

When inquiring check CP 2309 on handy form, pgs. 2-3



For MODERN
Chemical Analysis
Product Grading
Process Control

... Use the New **HELLIGE Chromatron**

PHOTOELECTRIC COLORIMETER and TURBIDIMETER

Easy 3-step Operation
Instantaneous Results
Unlimited Application
Completely Portable
Always Dependable



Please Send FREE Catalog No. 925

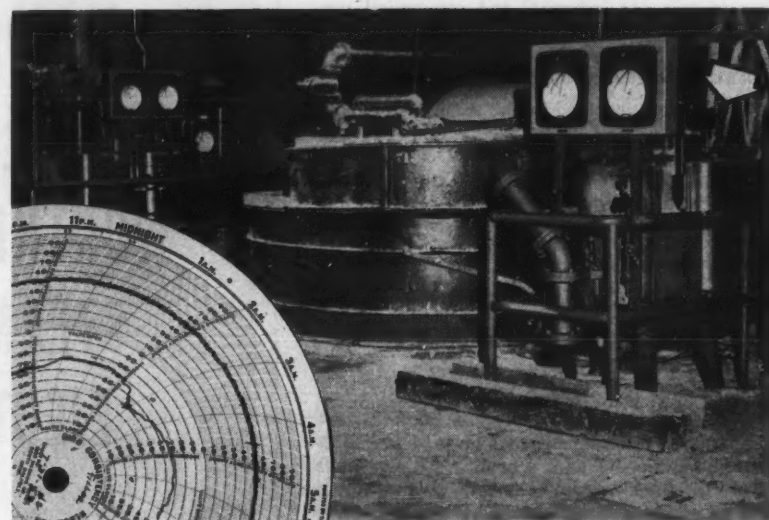
NAME _____
STREET _____
CITY _____ STATE _____

HELLIGE, Inc. 877 STEWART AVENUE
GARDEN CITY, N. Y.

Write Today!

When inquiring check CP 2310 on handy form, pgs. 2-3

instrumentation
& control



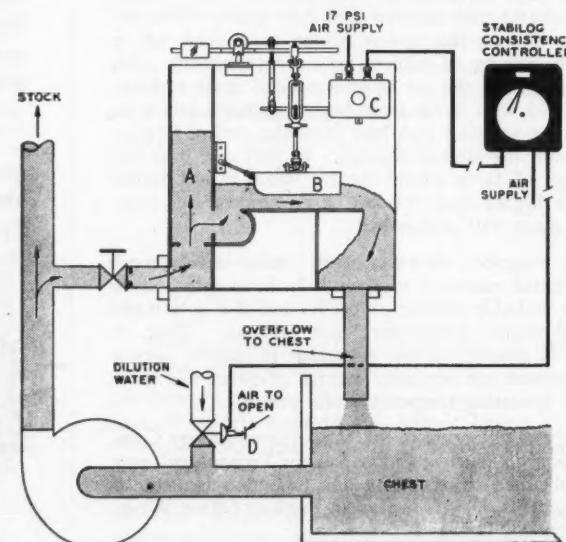
Arrow at right points to transducer and regulator which are connected with recording controller above them. Another regulator can be seen in background. Inset shows good consistency control despite variations of input stock

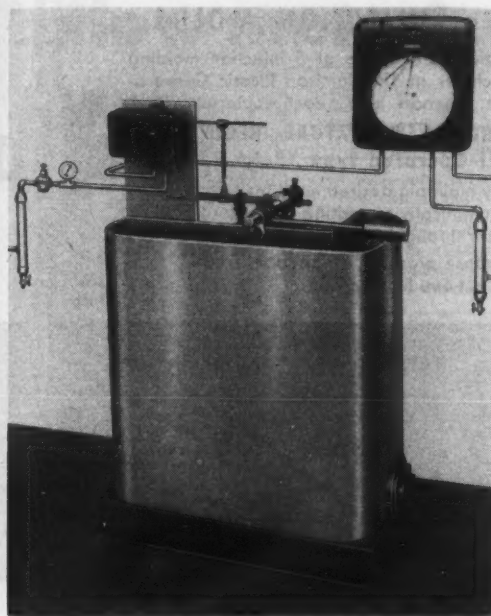
Schematic of system shows how stock is taken from main stream into constant head tank (A), flows under float (B) producing a pneumatic signal at transducer (C). Stock returns to chest, and controller operates valve (D) which adds dilution water to stock flow

Control of Pulp Consistency Means That Boxboard Meets Specs Economically

Varying consistency means that average top liner thickness must be high enough to avoid too thin a liner and it causes variation in board thickness. Regulator saves paper, produces uniform product

THE Ohio Boxboard Company at Rittman, Ohio makes a wide variety of folding cartons, as well as corrugated shipping containers and specialty paperboards for many uses. The board in these boxes is not as simple as a hasty glance would indicate. Actually it is made of four separate stocks which are felted together to give the desired properties.





Starting from the inside of the box, or bottom of the board, there is a stock made of reworked newspapers and other similar "clean" paper waste. Second layer is a heavy filler made from all sorts of waste paper. Next, comes a better reworked grade of filler which must be clean enough to add opacity to the final layer or top cover. This top cover is made up of virgin pulp and the very best grades of paper trimmings.

When these layers are brought together and felted into a single board, it is naturally important that, within limits, each layer has the proper thickness. This is especially true of the top cover which must reproduce color printing to good advantage.

In order to insure that layers are uniform in thickness, Ohio Boxboard is controlling pulp consistency. To do this, they have placed consistency regulators between the stock chests and Jordans. (Regulating consistency here has an added advantage of producing consistent refining in the Jordan.) Pulp goes directly from the Jordan to the stuff box.

Among the other types of regulators in service at the plant, a sampling type was installed in July, 1952. This system has the advantage that since it works on a small portion of the total flow, pulp can be handled in pipes rather than in open channels where flow is dependent on gravity. In operation it has been found that this regulator can usually maintain control within about $2\frac{1}{2}$ to 3%.

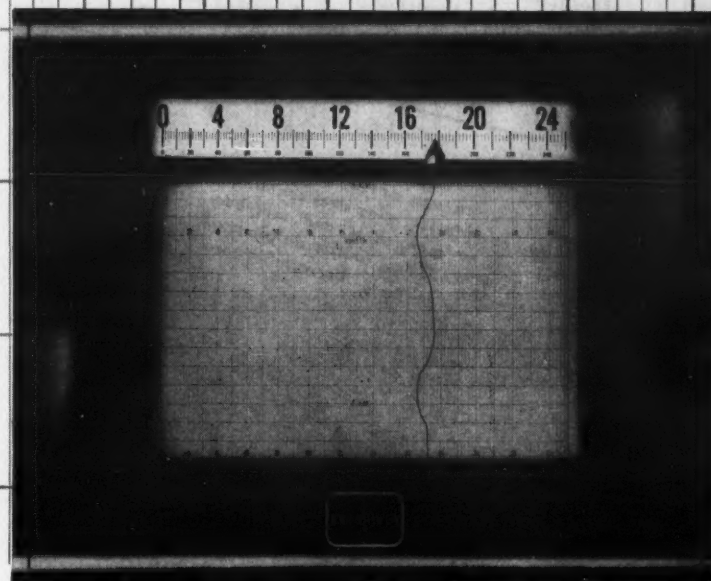
Unit operates by taking part of flowing stock into a constant head tank and passing it through a fixed orifice. Once through the orifice, pulp flows through an open channel to a return line leading to the chest. A float in this open channel is connected to a pneumatic transducer which drives a recording controller. Output signal of the controller adds dilution water

(Continued on page 62)

WHAT'S NEW AT BRISTOL . . . WHAT'S NEW AT BRISTOL . . .

Continuous Standardization

with
no
dry
cells



...in BRISTOL Electronic Dynamaster Potentiometers and Pyrometers

- **CONTINUOUS STANDARDIZATION** eliminates need for dry cells—supplies voltage that is continuously compared with standard cell.
- **CONTINUOUS OPERATION—NO TIME OUT.** With continuous standardization, the potentiometer is free to continuously measure, record, and control. No time out or interruption is required for periodic standardization.
- **NO STANDARDIZING MECHANISM.** Continuous standardization is taken care of electrically. There is no standardizing mechanism.

For the complete story on the modern Bristol Dynamaster, write for free 35-page booklet P1245. The Bristol Company, 141 Bristol Road, Waterbury 20, Conn. 3.18

LOOK FOR OUTSTANDING NEW
DEVELOPMENTS FROM BRISTOL

BRISTOL

THE DEPENDABLE GUIDEPOST
OF INDUSTRY

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

When inquiring check CP 2311 on handy form, pgs. 2-3

Free Data File...

Beckman application data

Beckman Automatic Titrator Improves Accuracy—Simplifies Chromium Titrations for Consolidated Vultee Aircraft

PROBLEM

More accurate determination of chromium in low alloy steel containing chromium, manganese and molybdenum at San Diego, California plant of Consolidated Vultee Aircraft Corporation.

SOLUTION

The Beckman A mounted on a pH room and elect vide readings from the follo pH Indicator in the centre placed i



For information on the Automatic Titrator and the above application see your Beckman Dealer, or Write For Data File 43-11.

HOW YOU CAN USE THE BECKMAN AUTOMATIC TITRATOR!

The Beckman Automatic Titrator performs accurate potentiometric titrations (neutralization, oxidation-reduction, precipitation and complex-formation types) with average time of 2 minutes—accuracy to 0.1%. Greater speed and accuracy than indicator methods and no special skill required.

BECKMAN INSTRUMENTS
control modern industries

BECKMAN INSTRUMENTS, INC.
SOUTH PASADENA 1, CALIFORNIA
Factory Service Branches: New York—Chicago—Los Angeles

Beckman Instruments include: pH Meters and Electrodes — Spectrophotometers — Radioactivity Meters — Special Instruments

When inquiring check CP 2312 on handy form, pgs. 2-3

INSTRUMENTATION

Shaft of linear pot can rotate with no ill effect...

400 to 15,000 ohms/inch with travels to 5.25 inches

Uses: Linear motion potentiometer is available in values from 200 ohms to 75,000 ohms.

Features: Standard models have a life of more than one million cycles and will operate over the temperature range from -55 to 71°C (-67 to 160°F). High temperature model works from the same minimum to a maximum of 149°C (nearly 300°F).

Description: Linear motion potentiometers are available with either one or two electrically independent resistance units both operated from the same shaft. Linear strokes of from 0.5 to 5.25" are available and shaft is free to rotate through 360°. Unit features positive dust seal and mounts from front end. Shaft only extends from the operating end. Both AC and DC outputs of relatively large magnitudes may be attained.

Linearity of the potentiometer is $\pm 0.5\%$ or better and zero position with respect to stroke can be adjusted externally.

(High temperature Rectipot Model 8620 has been announced by the G. M. Giannini Co., Dept. CP, 117 E. Colorado Street, Pasadena 1, Calif. . . . or for more information check CP 2313 on handy form, pages 2 and 3.)

Samples 20-70 cfm of air, collects dusts, etc for checking...

regular 4-inch filter paper used in portable unit

Uses: Portable air sampler passes 20 to 70 cubic feet per minute of air through regular filter paper so that contaminants can be checked.

Features: Several types of filter paper (approximately 4" diameter) can be employed.

Description: Air sampling unit was developed in laboratories of US Atomic Energy Commission and is now in large scale manufacture. Sampler has been used successfully to catch particles one hundredth of a micron in diam-

Cooling Control

For INJECTION MOLDS

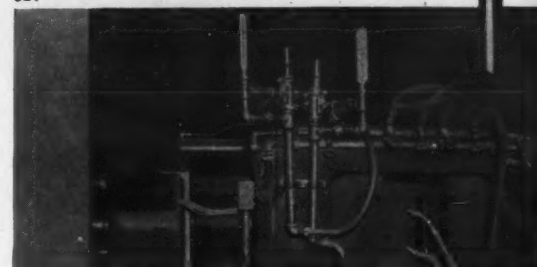
Shown here is one of 5 injection molding machines at The Jamison Plastic Corporation, Freeport, N. Y., each equipped with 2 SARCO TEMPERATURE REGULATORS Self-Operated type TR-54-R

they maintain desired mold temperatures by automatically regulating the flow of cooling water through the mold jacket.

Increase production—reduce rejects—save water! See Bulletin 705.

521

SARCO
TR-54-R



SARCO COMPANY, INC.

Represented in Principal Cities

Empire State Building, New York 1, N. Y.

SARCO CANADA, LTD., TORONTO 8, ONTARIO

When inquiring check CP 2314 on handy form, pgs. 2-3

For Faster, More Accurate MIXING and FORMULATING



the KING-GAGE

In mixing or formulating of paints, oils, soaps, plastics—wherever liquids must be weighed or measured—King-Gages save time and trouble. Faster, more accurate than metering or stick measuring. Save cost of weigh tanks. Used with all types of tanks and vessels, open and closed. Quickly read, in any desired units of volume or weight. Located at the tank or for remote reading. Work as a frictionless balance; have no mechanical moving parts. Investigate!

King-Gage here shows correct weight of thinner; added direct from storage to closed mixing tank in paint room of major auto plant. Fast; safe; accurate.

FREE KING-GAGE BULLETIN gives full details; shows typical applications. Write for a copy.



KING ENGINEERING CORP.

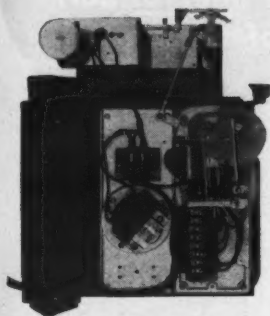
Box 50 • Ann Arbor, Mich.

SERVICE REPRESENTATIVES IN PRINCIPAL CITIES

When inquiring check CP 2315 on handy form, pgs. 2-3

CHEMICAL PROCESSING

a new electronic flow meter!



electronic operation
provides high speed
and greater accuracy

continuous integration
—no creep at zero

unaffected by normal
voltage, frequency and
temperature changes

3 to 1 range calibration
at recorder

HAYS Electronic Flow Meter

Since the circuit is of the electronic null-balance type, it is unaffected by normal voltage and frequency variations. Also, neither temperature variations nor reasonable length of transmission lines affect the calibration of the instrument.

The pen-drive motor is built for reversing duty. Normal variations in voltage and frequency have no noticeable effect on its operation. The integrator is continuous in operation and simple in mechanical construction. A micrometer zero adjustment for calibration is easily accessible. Indicators can be calibrated to read directly in rate-of-flow or other factors as desired. Write today for Bulletin 52-1074-222.

hays

Michigan City 34, Indiana

When inquiring check CP 2316 on handy form, pgs. 2-3



Control variations in levels from 1/4" upward. Remote control if desired — any distance. Controls unaffected by acids, caustics, pressures or temperatures.

Since 1933 B/W Controls have provided positive, dependable, economical liquid level control. No floats! No vacuum tubes! No moving parts in liquid.

WRITE FOR CATALOG
B/W CONTROLLER CORPORATION

Birmingham, Michigan
2204 E. Maple Road

FIRST and FOREMOST
IN THE FLOATLESS
CONTROL FIELD

When inquiring check CP 2317 on handy form, pgs. 2-3

INSTRUMENTATION

eter. It employs a turbine-type blower.

Approximately 50 different filter papers have been tested in the sampling unit. Hard surface paper which permits 20 cubic feet per minute of air to pass has been successfully used for runs of an hour or less. At other extreme, pleated respirator filter paper will pass 70 cubic feet per minute.

Component parts are filter holder which is machined from aluminum in two pieces and will accommodate both pleated and flat filter papers. Pump and motor are designed for 24-hour sampling where enough air passes through filter to keep motor cool. In some cases these samplers have been operated continuously for two or three months with filter paper changes every 72 hours.

Average life of the unit is 2500 hours with a minimum flow of 30 cubic feet of air a minute. Fan housing assembly is cast aluminum for light weight. Rate of flow is measured by variable orifice meter which indicates pressure drop across an orifice in the housing and is calibrated against a standard orifice on the intake.

In operation, quantitative measures may be made by using the same type of filter paper for 5, 15, and 30 minutes intervals (or similar intervals) and comparing them for amounts collected during various intervals. Procedure can tell if there is a danger period in the environment after a certain length of time.

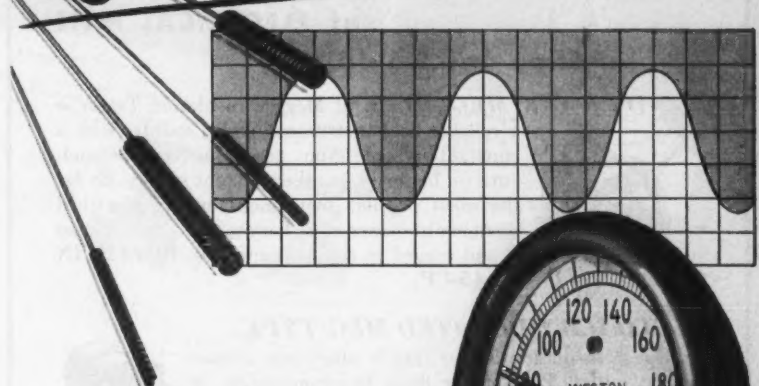
(Air sampler is manufactured by The Staplex Co., Dept. CP, 68-72 Jay Street, Brooklyn 1, N. Y. . . or for more information check CP 2318 on handy form, pages 2 & 3.)

Tells how controller anticipates change

Four-page, two-color technical bulletin explains principle and operation of capacity-type temperature controller. It contains explanation of how this controller produces "straight line" temperature performance.

Bul F 5783 is issued by Wheelco Instruments Div., Barber-Colman Co., Dept. CP, Rockford, Ill. When inquiring specify CP 2319 on handy form, pages 2 and 3.

Cycle-Seasoning...



gives added dependability
to **WESTON** all-metal
THERMOMETERS

To INSURE accurate functioning over long periods, a bi-metal sensing element must necessarily be aged. But there's a big difference in the aging methods employed! Each element in a WESTON Thermometer is first WESTON made . . . then placed in a chamber and subjected to *broad range cycle seasoning* for prolonged periods. When finally placed in a thermometer it is *fit and ready* to give the precise measurements . . . the long-term dependability . . . so typical of all instruments bearing the WESTON name. WESTON Thermometers are available in all types, sizes, ranges and stem lengths for all industrial applications. Literature available . . . WESTON Electrical Instrument Corporation, 614 Frelinghuysen Avenue, Newark 5, New Jersey.

Thermometers with
the **MULTIPLE HELIX**



Stocked
by leading
Distributors

WESTON Thermometers

When inquiring check CP 2320 on handy form, pgs. 2-3

MEGGER ELECTRICAL INSULATION TESTERS

Ratings up to
2000 Megohms
and 1000
Volts DC

... in types to suit varying needs
of ELECTRICAL MEN
for Shop and Field Use

HAND CRANK MEG TYPE of Megger Insulation Tester is a reliable field instrument, light, sturdy, with a constant-voltage type generator—no dependence on batteries or other current supply. By far the most popular instrument among electrical plant maintenance men. Easy to use—easy to read—and rugged in constant services. **BULLETIN 21-45-CP.**



RECTIFIER OPERATED MEG TYPE

of Megger Insulation Tester simply plugs into a convenient outlet. Portable or flush bench-mounted. A dependable production or inspection instrument. Quick, easy readings speed up otherwise costly tests.



DUAL-OPERATED MEG TYPE

of Megger Insulation Tester may be operated by hand or rectifier. Excellent solution for those requiring a versatile instrument for field and bench use.



BULLETIN 21-46-CP

A PRACTICAL HANDBOOK FOR PRACTICAL MEN

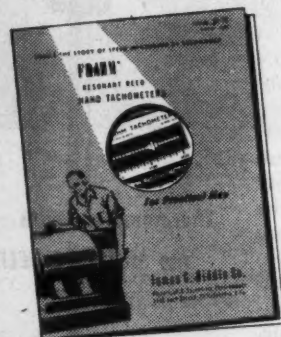
STORY of SPEED MEASURING by RESONANCE

with
FRAHM®

RESONANT REED HAND TACHOMETERS

The reed tells the speed... and this little booklet tells the story of resonant reeds. It's an interesting and practical presentation of the phenomenon of resonance as applied to the measurement of speed through the use of a set of tuned steel reeds mounted in a case with a scale calibrated in rpm.

WRITE FOR BULLETIN 31-P8-CP



JAMES G. BIDDLE CO.

ELECTRICAL TESTING INSTRUMENTS

SPEED MEASURING INSTRUMENTS

LABORATORY & SCIENTIFIC EQUIPMENT

1316 ARCH STREET, PHILADELPHIA 7, PA.

James G. Biddle Co.
1316 Arch St., Phila. 7, Pa.

Gentlemen:

Please send me material checked:

☐ 21-45-CP ☐ 21-46-CP
☐ 31-P8-CP

NAME _____

JOB FUNCTION _____

COMPANY _____

ADDRESS _____

Controlling Pulp Consistency

(Continued from page 59)

to main flow for closed loop control. Probably the most vulnerable point in the system is the float itself. It inevitably gets splashed and accumulates dirt. This, of course, throws off the absolute calibration of the controller until float is brushed clean again. However, this has not been a serious consideration since consistency is held constant at the new level and paper machine operator can adjust his flow of stock to compensate. Operators can consistently hit closer than specifications require—within about three or four thousandths of an inch.

Two other important points to watch are the orifice and sampling valve. When running dirty stock, these can become plugged so that necessary flow conditions at the float are not met. However, this situation produces a noticeable deviation usually and operators can spot it easily. Ohio Boxboard is working on several schemes for making warning of this situation automatic.

In general, the plant is pleased with operation of this instrument system and feels that it has two important features. First, pulp can be handled in pipes. Second, range can be changed easily by adjusting member linkage mechanism from the float to the transducer.

(Instrument System and Pulp Consistency Regulator itself were furnished by Bird Machine Co., Dept. CP, South Walpole, Mass. . . or for more information check CP 2322 on convenient Reader Service slip, pages two and three.)

No "dead-end" articles . . .

in fact, every article leads into two avenues of contact. First, we do publish at the end of all articles the names and complete addresses of companies who can give you specific information so that you can write direct. Or, there's the handy Reader Service slip which you can check and send to us.

THE EDITORS

Torque reaction powers meter for solids flowing 25 to 225 lb/min . . .

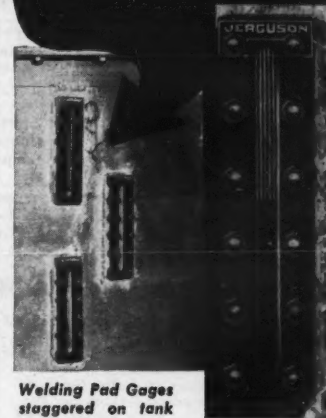
handles free-flowing dry materials like chemicals, grain, cereals, etc

Uses: Meter transmits and records mass rate of free-flowing solid materials such as grain, dry chemicals, flour, cereal products and other similar materials.

Features: Accuracy is $\pm 1\%$ when operating from 10 to 100% of full capacity.

Description: • Massometer is a force-balance instrument which accurately measures rate of flow (by mass) of free-flowing dry materials. Stream to be measured drops on a rotating disc driven at constant speed. Driving motor is supported in bearings and is therefore free to move about axis

SPECIAL JERGUSON WELDING PAD GAGES are integral part of this tank



Welding Pad Gages
staggered on tank
for continuous visibility.

HERE is a special line of gages that weld right to the liquid containing structure, thus becoming an integral part of it. It solves problems where it is impractical for you to use a conventional type gage because of solids in suspension in a liquid, etc.

These Special Gages follow Jerguson Standard Gages in general design and materials, except for the method of attaching. The chamber of the gage consists of a bar steel pad which is welded to the vessel.

Welding Pad Gages are made in both Reflex and Transparent types . . . in all sizes of Jerguson Standard Gages. Pressure ratings are available to your specific requirements. Welding pad may be of any metal desired to withstand corrosive or other conditions.

Write for Data Unit on Welding Pad Gages for complete details. Whatever your gage problems, let Jerguson engineers assist you.

JERGUSON

Gages and Valves for the
Observation of Liquids and Levels

JERGUSON GAGE & VALVE COMPANY
100 Fellsway, Somerville 45, Mass.

Offices in Major Cities

Jerguson Tress Gage & Valve Co., Ltd., London, Eng.
Pétrole Service, Paris, France

When inquiring check CP 2323
on handy form, pgs. 2-3

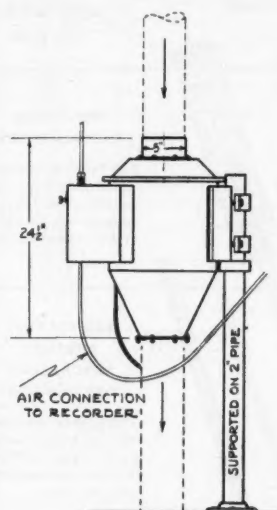
CHEMICAL PROCESSING

When inquiring check CP 2321 on handy form, pgs. 2-3



5" diam duct is usually used to feed mass instrument

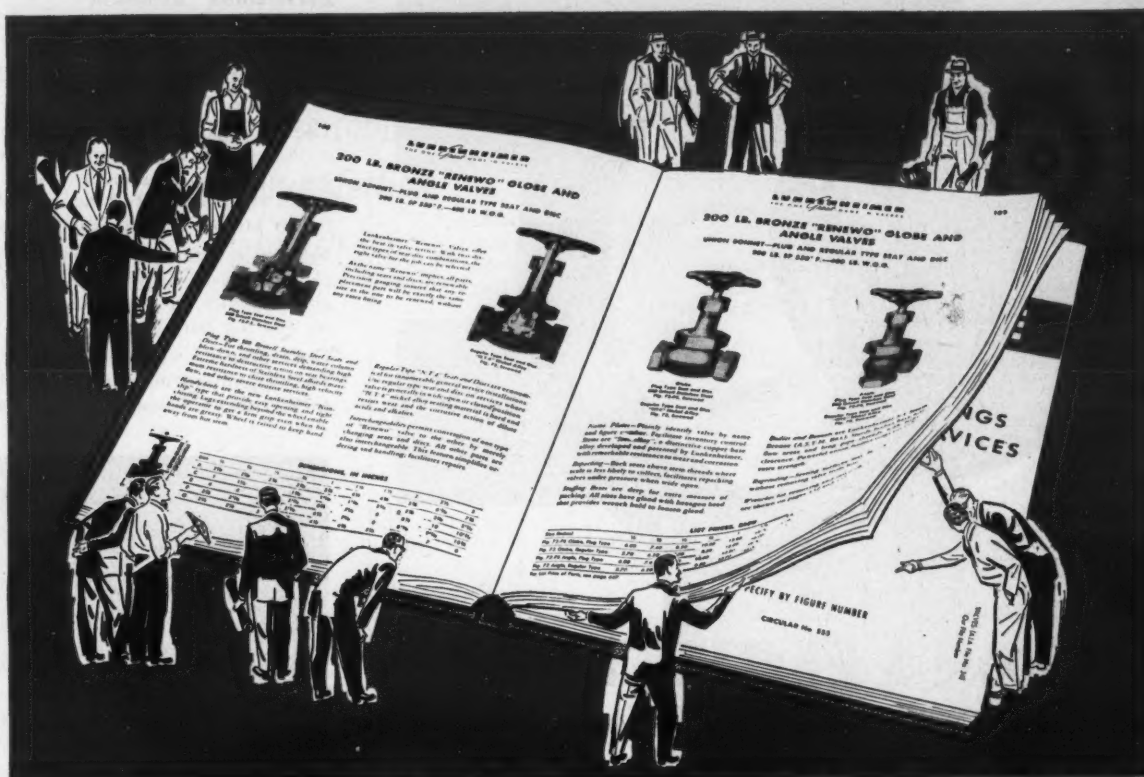
of motor shaft. Load on the disc creates reactive torque on motor housing which is directly proportional to flow of material. This torque is measured by pneumatic relay whose output is used to drive a circular chart pressure recorder which may also integrate.



Unit is small, measuring only 24 1/2" high by 26" wide overall and may be easily installed in tight quarters. Usual inlet and outlet duct is 5" diameter. Convenient arrangement for mounting is shown in sketch with Massometer supported by 2" pipe.

(Massometer has been developed by Wallace & Tiernan, Dept. CP, Box 178, Newark 1, New Jersey . . . or for more information check CP 2324 on handy form, pages 2 and 3.)

New 500-Page LUNKENHEIMER Catalog



Most Complete Valve Reference Work in Print!

The unique three-color, quick-reference Guide section of this new catalog makes it actually two volumes in one! Just refer to the Guide, where valves are grouped by pressure classes for easy comparison . . . the number of the page which includes complete details is printed under each illustration.

A handy four-way index is also included for your convenience. All the thousands of products in the complete Lunkenheimer line are described fully — with sectional and exterior views, sizes, dimensions, parts, prices, recommended uses, and performance. In addition, you'll find more than 100 pages of engineering data at your fingertips.

The new Lunkenheimer Catalog is so important that it is being distributed personally. When your copy is delivered, be sure to go over it briefly with the representative who brings it to you. He can show you how to take full advantage of all the features which save you time and trouble in ordering.

The Lunkenheimer Company
Box 360C
Cincinnati 14, Ohio

LUNKENHEIMER



QUALITY

BRONZE • IRON • STEEL

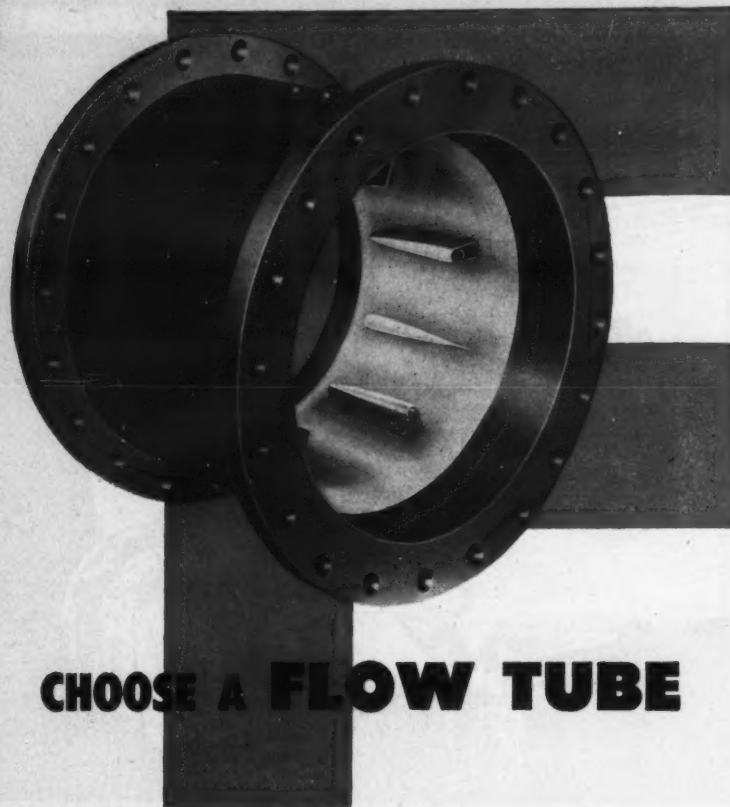
LUNKENHEIMER®

THE ONE *Great* NAME IN VALVES

L-353-12

When inquiring check CP 2325 on handy form, pgs. 2-3

FOR ACCURACY IN METERING



CHOOSE A FLOW TUBE

Flow Tubes are furnished with head capacity curves based on laboratory tests. For unusual piping arrangements, special tests can be run simulating actual conditions. The data furnished with each Flow Tube makes exceptional metering accuracy possible.

Flow Tubes have many other plus values — they're compact, comparatively light weight, and are easy to install since they require minimum straight runs entering and following. And, Flow Tubes are available in types and D/d ratios to provide differentials that can be accurately measured with the least head loss.

That's why Flow Tubes are being successfully used in scores of installations metering the flow of liquids and wet or dry gases. Available in all pipe sizes and suitable metals. They can be furnished with or without suitable secondary indicating, recording or totalizing instruments. For further information, write for your Flow Tube Data File. For specific recommendations, send us necessary flow data.



PRESSURE REGULATORS • RELIEF AND BACK PRESSURE VALVES • CUSHION CHECK VALVES • FAN ENGINE REGULATORS • PUMP GOVERNORS • TEMPERATURE REGULATORS • FLOAT AND LEVER BALANCED VALVES • NON-RETURN VALVES • VACUUM REGULATORS OR BREAKERS • STRAINERS • SIRENS • SAFETY VALVES • FLOW TUBES

FOSTER ENGINEERING COMPANY • UNION, N. J.

When inquiring check CP 2326 on handy form, pgs. 2-3

INSTRUMENTATION

Serviceman "listens in" to spot malfunction by noise . . .

pickup probe is connected with diaphragm and sound box for mechanical amplification

Uses: "Stethoscope" can be used to listen to sounds of leaking valves, defective bellows, wrist pin and bearing knocks, piston slaps, grinding gears, valve noises, turbulence, and other abnormal noises produced by malfunction of equipment.

Features: Simple design has probe connected to mechanical diaphragm in sound box so that entire amplification is mechanical with no batteries or wearing parts.

Description: Designed specifically for locating and diagnosing mechanical troubles by the noises they generate, listening device is a tool to be used



Operator listens to noises produced by motor bearing

where other methods fail. Instrument is reported to be good at localizing seat of difficulty.

Entire unit consists of an ear-piece containing sound box system and transmitter. Sensitive diaphragm is capable of picking up sounds which cannot be heard otherwise and amplifying them until they are audible. Instrument is fitted out with plastic carrying case which is light and compact.

(Soundscope is a product of Marsh Instrument Co., Dept. CP, Skokie, Ill. . . or for more information check CP 2327 on convenient Reader Service slip, pages 2 and 3.)

Shows wide-band action of control valve

Eight-page publication delves into operating characteristics of wide band proportioning control valve. It gives complete information on sizes, construction, temperature and pressure ratings, pressure drops, and engineering specifications. Pub-

PALMER

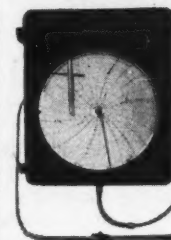
MERCURY ACTUATED

Temperature Indicating Instruments



4 1/2" DIAL THERMOMETERS

Made in 3 types to suit any requirements. Rigid stem, wall or flush mounted, 11 inches of scale reading. Interchangeable with standard industrial separable sockets. Stem can be placed at any angle and case can be rotated to any readable position.



RECORDING THERMOMETERS

Twelve inch die-cast aluminum case with black or white wrinkle or satin finish. Single or multiple pen construction. Electric or spring wound clock, 24 hour or 7 Day Revolution. Flexible Armor and bulb of stainless steel. Ranges —40 +950°F or Equivalent in °C.



INDUSTRIAL THERMOMETERS

Red-Reading Mercury —Extruded brass case — chrome finish. Ranges —40 +950°F or Equivalent in °C.

RED-READING MERCURY LABORATORY THERMOMETERS

Thoroughly annealed for permanent accuracy. Complete line A.S.T.M. and fractional division types.

FOR COMPLETE INFORMATION WRITE FOR CATALOG 200 G

PALMER

THERMOMETERS, INC.

Cincinnati 12, Ohio • MEtrose 1-500

When inquiring check CP 2328 on handy form, pgs. 2-3

CHEMICAL PROCESSING

lication abounds in plotted and tabulated data covering all characteristics of these control valves.

Specification Sheet 420 is issued by Station 40, Brown Instruments Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 2329 on convenient Reader Service slip, pages two and three.)

Damping device is also indicator in variable area flowmeter for gases . . .

instruments are pre-calibrated for specific gas; can be cleaned in 2 minutes for sustained accuracy

Uses: Designed for measuring flow rates of air and industrial gases. Meters are available from stock for the following gases: ammonia, dissociated ammonia, propane, exothermic cracked (rich or lean), air, natural gas, butane, nitrogen, city gas, purging gas, carrier gas, hydrogen, oxygen, and endothermic gas. Usual scales run from 0-10 to 0-1500 cubic feet per hour.

Features: Eleven sizes are available, each meter being calibrated for a specific gas and rate of flow regardless of its size.

Description: Variable-area flow meter has two separate parts. Usual tapered tube and float are located above indicating scale. Indicator-damper is a hollow chamber suspended below tapered tube. Indicator is connected to float by means of a rod so that when float is at zero position indicator reads zero on scale. When increased flow causes float to rise, indicator is pulled up through oil of damping section to reach a stable reading. Indicator can be seen against scale at all times.

Overall height of the meter is close to 20 inches, depends on size desired. Scale in each case is about six inches

long. Eleven ranges are available — though light gases cannot be measured at flows below the zero to twenty cubic feet per hour (and zero to thirty cubic feet per hour in the case of hydrogen). Heavy gases such as butane and propane cannot be monitored by a single meter at rates higher than 750 cubic feet per hour.

Top cap of meter can be replaced by a throttling valve providing manual control of flow at point of measurement. Construction has been simplified so that flow meter can be taken apart without use of tools. Complete cleaning operation takes less than two minutes. Designed for panel mounting, instrument can also be supplied with brackets for mounting singly, in pairs, or in threes.

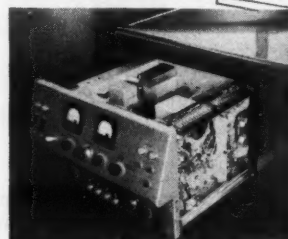
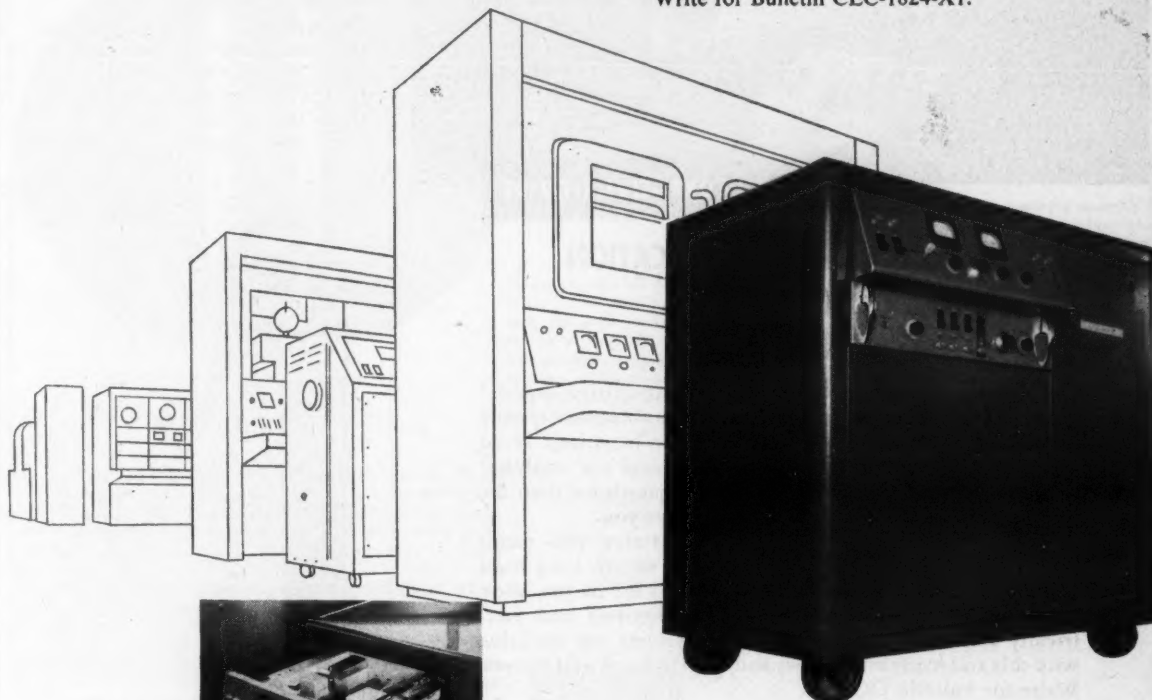
(Flo-Meter is a development of Waukeg Engineering Co., Dept. CP, 759 N. Milwaukee St., Milwaukee 2, Wis. . . . or for more information check CP 2330 on handy form, pages 2 and 3.)



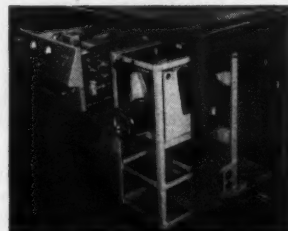
A single instrument for Process control Leak detection Research

THE latest mass spectrometer in America's accepted standard line is the Consolidated Model 21-610, a precision electronic instrument with extreme stability for unattended process monitoring in the petro-chemical industries. Used with a hand-held probe it operates as a detector for tracing leaks of any gas within its mass range. The Model 21-610 is suitable for qualitative and quantitative component determinations in gaseous and light-liquid mixtures. Moderately priced and economical to operate, needing no expensive refrigerants, this new instrument brings mass spectrometry as a control procedure within reach of small refineries and chemical manufacturers.

Write for Bulletin CEC-1824-X1.



All components are accessible: either by removing side panels or by pull-out chassis containing circuits and controls.



Electronic and vacuum/analyzer assemblies may be removed intact and operated independently.

Model 21-610 Mass Spectrometer

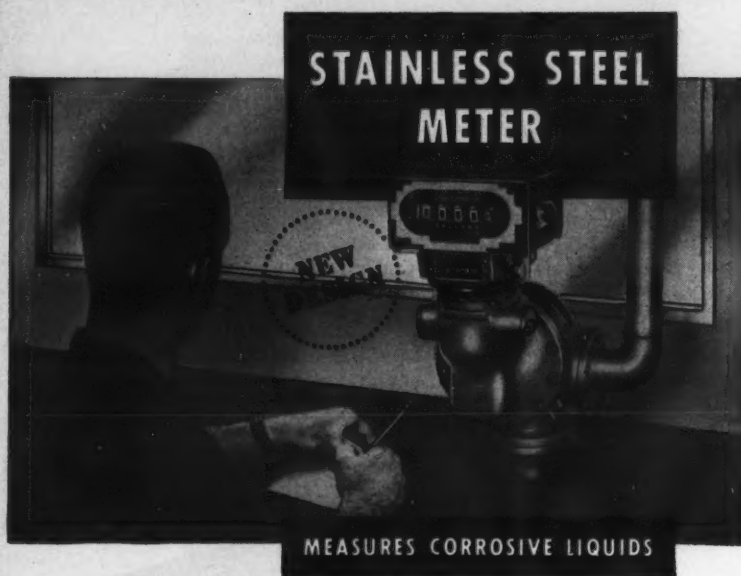
Consolidated Engineering CORPORATION

300 North Sierra Madre Villa, Pasadena 15, California
Sales and Service through **CEC INSTRUMENTS, INC.**,
a subsidiary with offices in: Pasadena, New York,
Chicago, Washington, D. C., Philadelphia, Dallas.

analytical
instruments
for science
and industry

When inquiring check CP 2331 on handy form, pgs. 2-3

ALL NEW THROUGH and THROUGH



PROVIDES METERED IDENTIFICATION FOR FORMULA, INVENTORY, AND COST CONTROLS

Got a measurement problem involving corrosive liquids? Want meter control over inventories? Looking for quality and quantity controls when blending or batching? Need accurate meter records for accounting and tax analysis? If your answer is "yes" to any of these questions, then the new Rockwell 2BC Rotocycle meter is for you.

Constructed *inside and out* of stainless steel this meter resists corrosion, is easy to clean. Has a sturdy, long lived Rotocycle measuring mechanism—famous for its precision accuracy. "Set-stop" quantity control registers and electrically actuated remote registration systems are available with this and many other types and sizes of Rockwell meters. Write for bulletin OG-403.



You Can RELY ON ROCKWELL

INDUSTRIAL METERS

—CLIP COUPON—MAIL TODAY—

ROCKWELL MANUFACTURING COMPANY
Pittsburgh 8, Pa.

A5312R

Gentlemen:

I am interested in measuring _____ (Name of Liquid)
with your 2BC Stainless Steel Meter.
Pipe Size _____" Working Pressure _____ psi Temperature _____°F max.
Max. Flow Rate _____ gpm Min. Flow Rate _____ gpm

YOUR NAME _____

COMPANY _____

STREET _____

CITY _____ ZONE _____ STATE _____

When inquiring check CP 2332 on handy form, pgs. 2-3

INSTRUMENTATION

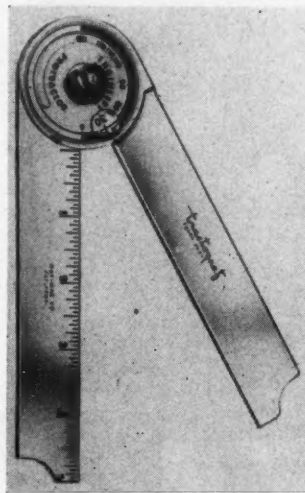
Close reading of angles
possible — protractor's
cursor magnifies . . .

180° plus 5-inch scale on
handy drawing instrument

Uses: For measuring angles
from 0 to 180° or for use as
a general purpose drawing in-
strument.

Features: Adjustable protractor
has built-in plastic magnify-
ing hairline arrangement which
allows 180°-arc scale to be read
closely.

Description: Protractor-draw-
ing instrument is composed of
two transparent plastic arms
hinged so that the angle between
them can be read from a 0 to
180° scale. Locking adjustment



Folded dimensions: 2 x 7"

makes it possible to permanently
set any desired angle within the
range, or arms may be left free
to move to new angles as needed.
Dial is calibrated in 1° divisions
with heavy marks at 5°.

Overall dimensions of the in-
strument are 2 inches wide by 7
inches long when set at zero. A
five inch scale is engraved on one
arm. Ruling edges of arms are
smooth and bevelled.

(Tractograph is manufactured
by Way-Mac Mfg. Co., Dept.
CP, 8112 Melrose Ave., Los
Angeles 46, Calif. . . or reader
may secure more information by
simply checking CP 2333 on con-
venient Reader Service slip, pages
two and three.)

NOT THIS...



Now... for a
good shower



—deep freeze!



—scalding hot!

BANISH
BOOBY TRAP
SHOWERS

Use POWERS
THERMOSTATIC
Water Mixers

BUT THIS



Real comfort and
safety. No waste
of time or hot and
cold water.

POWERS

THERMOSTATIC
WATER MIXERS

—eliminate shower accidents

They are completely automatic, hold shower
temperature wherever you want it regard-
less of pressure or temperature changes in
water supply lines. Failure of cold water
instantly shuts off the shower.

Tests prove Powers is safest shower regu-
lator made for factories, schools, hospitals,
hotels and clubs. Thousands now in use.

Used for Many Industrial Processes. Users
report control within 1/2° F. Temperature
Ranges: 65-115° F., 60-125° F., 75-175° F.
Write for Bulletin 365. (b13)

THE POWERS REGULATOR CO.

Skokie, Ill. • Offices in Over 50 Cities • Est. 1891

When inquiring check CP 2334 on handy form, pgs. 2-3

Depend on AUTO-LITE

for
Temperature Indication

You Benefit from  Eye-Level Readings



3-way
adjustable
mounting

Model F-1
temperature indicator

Auto-Lite offers many ther-
mometer styles, permitting
plant-wide temperature obser-
vation at low cost. Standard
temperature ranges from min-
us 60°F to plus 750°F. Send
for latest catalog showing vari-
ous types.

THE ELECTRIC AUTO-LITE COMPANY
INSTRUMENT AND GAUGE DIVISION
TOLEDO 1, OHIO
NEW YORK • CHICAGO • SARNIA, ONTARIO

TEMPERATURE INDICATORS & RECORDERS

When inquiring check CP 2335 on handy form, pgs. 2-3

CHEMICAL PROCESSING

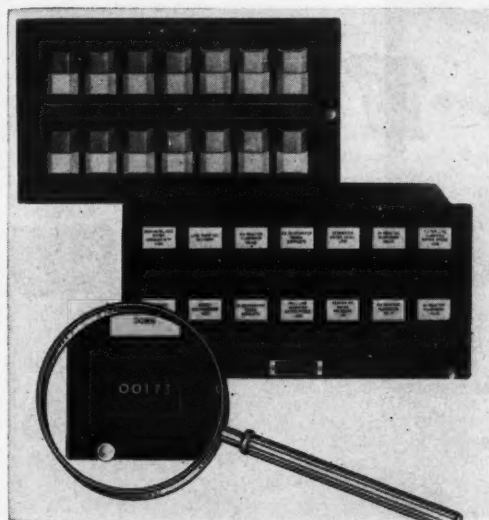
**How many alarms were sounded?
Counter in set-up
keeps track . . .**

and signal sequence selector points to piece of equipment which failed first

Uses: Totalizing system keeps a running check of how many times conditions went off-normal for each of variables monitored by annunciator system. A second model does this and, in addition, has built-in "signal sequence selector" which indicates which particular variable was off-normal first in a sequence which caused several to be off-normal.

Features: Both types of this "Tele-Counter" can be adapted to existing annunciator systems supplied by manufacturer.

Description: When it is important to know the frequency with which any point covered by an annunciator system is off-normal, this device may be employed. Model TC Tele-Counter keeps con-



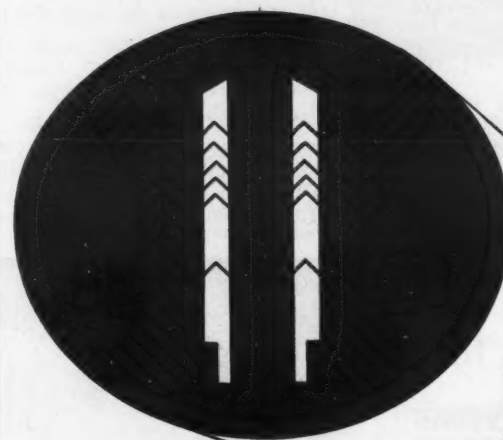
Close-up in photograph shows counter located under alarm window

tinuous count of every off-normal signal as indicated by annunciator alarm. Any number of individual alarm points may be selected for totalizing, or entire unit may be so equipped. Repeater window markings on the totalizer unit readily identify each associated signal station.

Model TCS employs a signal sequence selector in addition to totalizers. Initial off-normal signal at annunciator is immediately indicated by means of illuminated window associated with counter. This allows operator to tell which piece of equipment (or process) failed first.

(Models TC and TCS Tele-Counters are products of Tigerman Engineering Co., Dept. CP, 4332 N. Western Ave., Chicago 18, Ill. . . . or reader may secure more information by simply checking CP 2336 on convenient Reader Service slip between pages two and three.)

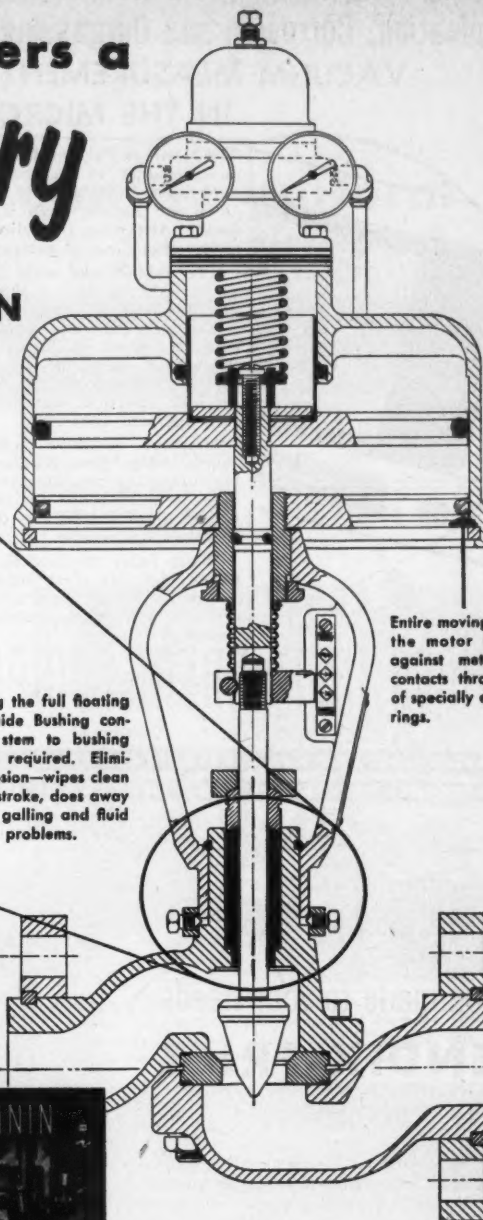
Now ANNIN offers a Revolutionary PRINCIPLE IN VALVE CONSTRUCTION



Illustrating the full floating Teflon Guide Bushing contact. No stem to bushing tolerance required. Eliminate corrosion—wipes clean on every stroke, does away with both galling and fluid hardening problems.

By incorporating a Teflon Guide Bushing,—Annin design provides mechanical perfection in control valve operation. How? Because now Annin valve offers full floating operation free from any metal to metal contact in moving parts. The valve stem floats in contact with Teflon,—the Domotor portion of the valve floats on Hycar "O" rings. Teflon eliminates valve stem galling, and all difficulties which develop when soft, corrosion resisting alloys are in contact as bearings.

Teflon is self-lubricating and requires no external lubrication. It won't stick so the customary tolerance between guide bushing and valve stem is eliminated. With the new type guide bushing used by Annin, an interference fit is provided and solidly retains the valve stem and plug assembly. The stem is wiped clean on every stroke preventing scale or dirt from scoring or any tendency toward fluid hardening problems. Valves now in service may be changed over to the new guide material.

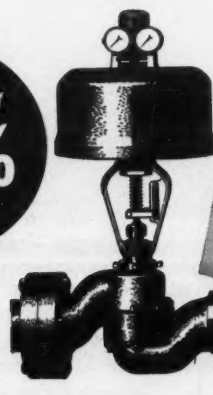


Entire moving assembly of the motor is insulated against metal to metal contacts through the use of specially designed "O" rings.



Write for your copy now

CUT
INVENTORY
50%
WITH

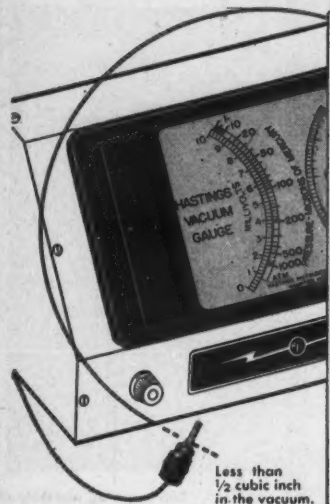


ANNIN Control VALVES

THE ANNIN COMPANY 3500 Union Pacific Avenue
Los Angeles 23, California

When inquiring check CP 2337 on handy form, pgs. 2-3

Contamination, Corrosion and Outgassing Free! VACUUM MEASUREMENT IN THE MICRON RANGE



The Hastings Vacuum Gauge gives continuous direct readings in microns of mercury — without range switching or calibration factors. Only one control knob is needed for initial setting. After that, the calibration holds indefinitely, regardless of pressure changes.

The stability and wide range of this gauge (1 to 1000 microns) makes it extremely suitable for both laboratory and production use in vacuum tube manufacture, distillation, automatic exhaust machines, dehydration and refrigerator servicing. Its rapid response to pressure changes makes it especially suitable for leak detection, warning devices and pressure operated controls.

Hasting's exclusive noble metal thermocouple design gives accuracy, long life and a low operating temperature. This construction prevents fluctuations due to ambient temperature changes and reduces the time constant to less than 1/2 second.

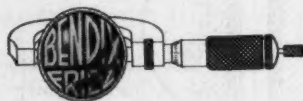
Write today for free literature and prices. Other Hastings ultra sensitive precision instruments include electronic flowmeters, manometers, air velocity meters and electronic standard cells.

HASTINGS INSTRUMENT COMPANY, INC.

HAMPTON, 31 VIRGINIA

DESIGNERS AND BUILDERS OF RAYDIST AND SPECIAL
ELECTRONIC, ELECTRICAL, AND MECHANICAL INSTRUMENTS

When inquiring check CP 2338 on handy form, pgs. 2-3



precision-made to your needs...

BENDIX-FRIEZ thermistors

Maybe your need for these temperature responsive resistors can be satisfied by a type we carry in stock. Maybe you require a specially-developed type. In either case you can depend on Bendix-Friez to provide precision-made thermistors to serve you with maximum efficiency. High standards of quality control in manufacture make Bendix-Friez Thermistors pre-eminent in their field... assure you of utmost satisfaction.

STANDARD TYPES FOR IMMEDIATE DELIVERY

Size (inches)	@ +30°C.	@ 0°C.	@ -30°C.
.140 x .75	45.0 ohms	86 ohms	194 ohms
.040 x 1.5	12,250 ohms	26,200 ohms	65,340 ohms
.018 x 1.5	35,000 ohms	82,290 ohms	229,600 ohms

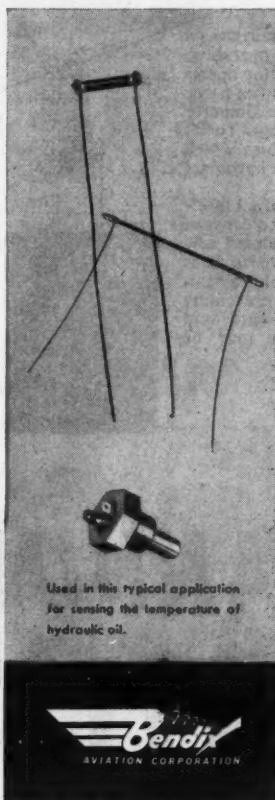
Write for details.

FRIEZ INSTRUMENT DIVISION of . .

1418 Taylor Avenue, BALTIMORE 4, MARYLAND

Export Sales: Bendix International Division
72 Fifth Avenue, New York 11, N. Y.

When inquiring check CP 2339 on handy form, pgs. 2-3



INSTRUMENTATION

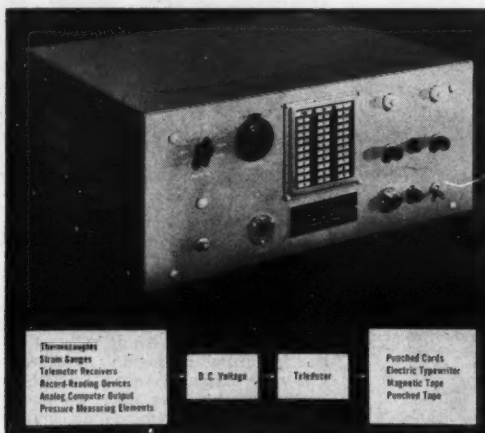
Less than a second required to reach balance for 0.1% conversion accuracy...

analog-digital converter uses low DC voltage signal directly without amplification

Uses: Input to converter is voltage analog of measured quantity — unit will accept signals from thermocouple, strain gages, telemetering receivers, analog computers, etc — and input is converted to digital form for punching IBM cards or paper tape, or recording on magnetic tape.

Features: Full signal range is split up into 1000 digital increments. Converter is accurate to nearest increment, or 0.1%. Time to come to balance is about 0.8 second.

Description: Analog-digital converter operates upon demand, produces a digital reading corresponding to input voltage signal, and holds this digital output for punching or readout on visual,



Converter operates electric typewriter, or punches IBM cards. Input signal is any DC analog voltage

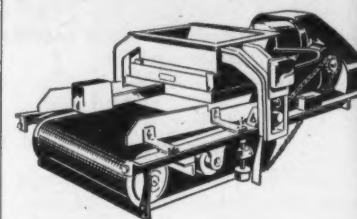
decimal, light bank. Instrument uses low DC signal voltage, and amplification is not required where sensing element produces this signal. Where high voltage signal is produced, voltage dividers can be used to operate converter.

Supply voltage of the instrument is 3 volts taken from two standard dry cells. Life of the batteries in normal service is about eighteen months. Full scale voltage across converter may be set at any value from 20 millivolts to 1 volt. Sensitivity, therefore, can be adjusted where small signals are being converted.

Null-balance operation is attained by means of three stepper switches which bring resistance into bridge circuit for balance. These always start from "reset" condition and establish balance voltage for input test voltage. Action starts when readout button of converter is pressed, or by closing circuit remotely. When balance has been achieved, indicating light comes on and digital signal is made available for external use.

Converter can be used with electric typewriter. When it is, total time per reading varies between

CONSTANT-WEIGHT FEEDER



A regulating feeder which maintains a positive constant-weight feed rate regardless of feed size or volumetric variation. Bulletin 33-D-13

GRINDING MILL FEED CONTROLS

"ELECTRIC EAR"®



An electronic mill feed control which increases grinding mill capacity 8 to 20%. Bulletin 42-13

HARDINGE COMPANY, INCORPORATED

YORK, PENNSYLVANIA • 340 Arch St. • Main Office and Works
New York • Toronto • Chicago • Kansas City • St. Louis • San Francisco

When inquiring check CP 2340 on handy form, pgs. 2-3

CHEMICAL PROCESSING

INSTRUMENTATION

0.7 and 1.3 seconds. Converter itself is $15\frac{1}{4} \times 19 \times 8$ inches high and weighs about 45 pounds. Power source is standard 115 v 60 cps AC, unit draws 75 watts.

(Type 24A Teleducor has been developed by Telecomputing Corp., Dept. CP, Burbank, Calif. . . . or for more information check CP 2341 on handy form, pages two and three.)

Simple spectrometer accurate to 0.25 per cent . . .

three versions cover infrared from 0.5-2.5 microns, 2-15 microns, and 15-38 microns

Infrared spectrometer is designed for routine single-point chemical analyses. Accuracy is plus or minus 0.25 percent. Typical tasks include routine measuring of concentration of one or more components in a mixture, determining presence or absence of an impurity, routine checking of raw materials.

Simplified instrument is somewhat similar to previous, more elaborate, models. It embodies double pass optics which account for instrument's high accuracy throughout range. Scattered radiation is restricted to less than 0.1 percent.

Three wavelength ranges are being made available: near infrared, 0.5-2.5 microns; fundamental region, 2-15 microns; far infrared, 15-38 microns. Unit is



Simplified instrument is made up of manufacturer's "building blocks"

made up of standard building blocks used in manufacturer's other instruments. Wide range of cells and accessories are available. Simplified instrument may be converted to automatic recording by adding the proper accessories.

No air conditioning is required for operation of this unit. It is also highly insensitive to vibration. Optical system for "near" infrared employs lead sulfide detector, quartz optics, and tungsten lamp. System for "fundamental" region uses thermocouple detector, sodium chloride optics, Globar light source. "Far" region uses thermocouple detector, cesium bromide optics, and also a Globar source.

(Model 112-S Infrared Spectrometers have been developed by The Perkin-Elmer Corporation, Dept. CP, Norwalk, Conn. . . . or for more information check CP 2342 on handy form, pages 2 and 3.)

HERCULES



...with FOXBORO Control

From the scale to the drier, Hercules Pentaerythritol is produced under "automatic" process control that makes uniform batches of this important Alkyd Resins Intermediate a certainty. At every stage of the process, Foxboro Controllers automatically hold temperature, pressure, and flow of reactants exactly as pre-set by the operator. And when production rates are reset, Foxboro control action swings smoothly, instantly to the new control points.

A wide variety of processes throughout the chemical industry are being successfully controlled by Foxboro Instruments. Whether your production problem involves temperature, pres-

sure, flow or other process variables, Foxboro Control can help you get better product quality . . . efficiently. Write for engineering data covering your particular problem.



A few of the 25 Foxboro Instruments that automatically control the pentaerythritol process at Hercules Powder Company's Mansfield, Mass. plant. Operator can instantly change production rates at any stage.



FOXBORO

REGISTERED PAT. OFF.

INSTRUMENTATION

THE FOXBORO COMPANY, 817 NEPONSET AVE., FOXBORO, MASS., U.S.A. • FACTORIES IN THE UNITED STATES, CANADA, AND ENGLAND

When inquiring check CP 2343 on handy form, pgs. 2-3

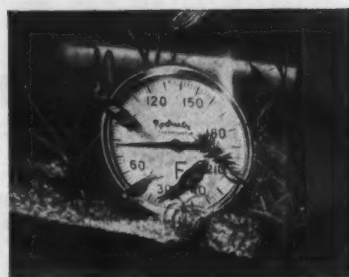
Prevent thermometer fogging

No matter how long you dunk it, you can't cloud the accuracy of a Rochester dial thermometer.

THIS SUBMERSIBLE QUALITY is important to you. It means fast, easy temperature readings... without any danger of a foggy crystal causing inaccuracy. Rochester dial thermometers are assembled and hermetically sealed in a special humidity-controlled "dry" room. This eliminates any possibility of condensation inside the thermometer.

ALL STAINLESS STEEL CONSTRUCTION—All outer parts (except crystal) of Rochester dial thermometers are stainless steel. What's more, the case, stem and nut are fused into a single corrosion-resistant unit by an exclusive Rochester welding process.

EXCLUSIVE OUTSIDE RECALIBRATION—Rochester makes the *only* industrial thermometer that can be recalibrated from outside the case. If an extremely hard blow should knock it out of ad-



justment, you can have it back on the job in less than a minute... without taking the thermometer apart or breaking the hermetic seal.

You can order Rochester thermometers from one of our specialized instrument representatives listed in Sweet's Catalog. Or write direct for full details.

MILLIONS of Rochester dial thermometers are now delivering dependable service.



When inquiring check CP 2344 on handy form, pgs. 2-3

NOW—take PIPELINE TEMPERATURES



This new **BAYONET CONTACT THERMOCOUPLE WITH PIPE CLAMP ADAPTER** attaches quickly and easily to the outside of a pipe—does not project into pipe. It is installed without inserting wells, tees or drilling and tapping holes. The sensitive tip is spring-loaded for good thermal contact and responds rapidly to temperature changes of the pipe surface. Furthermore, the thermocouple can be detached and used again elsewhere. Excellent for steam, process, or heat transfer lines where you must know temperatures at various points. Inexpensive... accurate.

Standard adapters fit pipes from 1/4" to 4". We can make even larger sizes, if you wish.

SEND
FOR
BULLETIN
22-100-R

Thermo Electric Co., Inc.
FAIR LAWN NEW JERSEY

When inquiring check CP 2345 on handy form, pgs. 2-3

INSTRUMENTATION

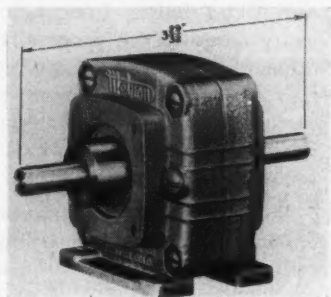
Little-big speed changer makes 600 ratios available...

it hits intermediate power range around 1/10 horsepower

Uses: Speed changer fills gap between tiny instrument types and changers with substantial power ratings.

Features: More than 600 speed ratios are available for changer rated at 1/10 horsepower.

Description: Speed reducers contain hardened steel 48-pitch gears. Measuring 2-7/16" high x 2-3/8" wide, units can be used in cramped quarters. Shafts are



5/16" diameter and designed in line so that they may be substituted in existing equipment. Splash type oil bath is used in addition to anti-friction bearings.

(Series 10 Bantam Speed Changer is a product of Metron Instrument Co., Dept. CP, 432 Lincoln Street, Denver 9, Colo. ... check CP 2346 on form, pages 2 & 3.)

Tensions and pressures in or out of machine

Several applications, including a test of breaking point for tableted materials, are pictured in five printed pages describing force indicator. Mechanical device is available for full scale capacities from 10 to 5000 pounds and can be used to show tension or compression. Frequently applied in other testing machines, device can also be used by itself to measure actuating forces, tensions, etc.

"Mechanical Pressure Gage" is described in Bul PG-2 issued by W. C. Dillon & Co., Inc., Dept. CP, 14620 Keswick St., Van Nuys, Calif. When inquiring specify CP 2347, pgs. 2 & 3.

GET SIMPLIFIED CONSTRUCTION SUPERIOR PERFORMANCE FREEDOM FROM TROUBLE



Moving parts, in conventional steam traps, are subject to corrosion, pitting, sticking and failure.

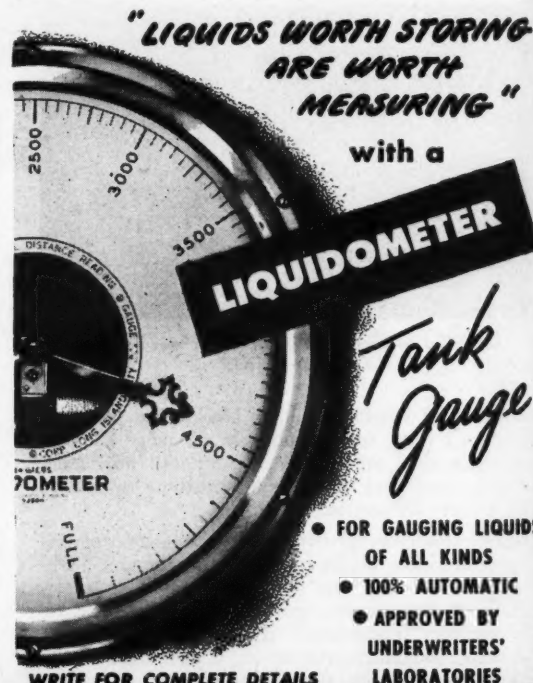
The trap must then be dismantled and repaired. Production is interrupted. Costs go up.

Drainator—the modern steam trap—avoids these difficulties by eliminating the parts which cause them. It has not a single moving part but is operated by properties in the steam. A fluctuating water level in the gauge glass signals that the trap is functioning properly.

Write for the complete and interesting story now.

The COE MANUFACTURING CO.
503 BANK ST. PAINESVILLE, OHIO

When inquiring check CP 2348 on handy form, pgs. 2-3



- FOR GAUGING LIQUIDS OF ALL KINDS
- 100% AUTOMATIC
- APPROVED BY UNDERWRITERS' LABORATORIES

WRITE FOR COMPLETE DETAILS

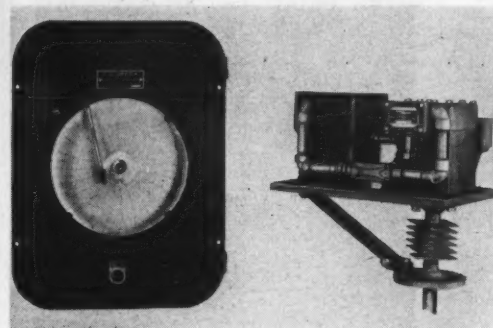
THE LIQUIDOMETER CORP.
38-18 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

When inquiring check CP 2349 on handy form, pgs. 2-3

Designed specially for polymerization viscometer mounts on vessels, stands high temp . . .

wide range of pressure and vacuum conditions are allowable for recording instrument

Specifically developed for large reactors where viscosity of resins and polymers are to be recorded at processing temperatures, viscometer is particularly suitable for following polymerization processes. Measuring element is fabricated with materials suitable for the application, and dimensions are flexible



Shows operating mechanism of viscometer

so that it may be designed for a specific installation. Measuring element complies with Underwriters' Laboratories requirements for Class 1 Group D locations.

Viscosity is recorded on a 12-inch circular chart driven with either a 24 or 8-hour clock movement. High viscosity alarm furnished can be set to any desired predetermined value and signals when process should be terminated.

Principle of operation is the measurement of time required for a piston to fall a given distance through material to be measured. Piston falls through sample contained in a cup placed directly in the batch. Instrument is permanently mounted on equipment — no sample need be removed for testing. Record consists of a series of peaks on circular chart and can be read as a continuous record.

(Polymerization Viscometer has been developed by Norcross Corporation, Dept. CP, Newton 58, Mass. . . check CP 2350 on form, pages 2 and 3.)

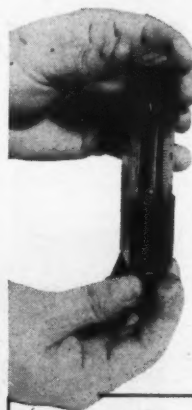
For proportioning chemicals in water treatment

Two-color, four-page bulletin describes proportioning pump which can be used for water treatment, boiler feed water, or other neutral or alkaline, non-corrosive chemical solutions. Pump is built to handle a maximum of six gallons per hour per cylinder. Output is adjustable from 100 to 0%, and both higher and lower capacity models are described in bulletin.

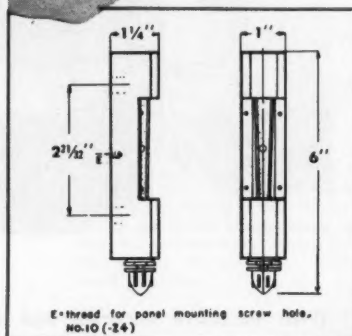
Bul H-20-M is issued by Milton Roy Co., Dept. CP, 1300 E. Mermaid Lane, Philadelphia 18, Pa. When inquiring specify CP 2351, pgs. 2 & 3.

New, Inexpensive SK Purge Rotameters* Indicate and Permit Manual Control of Fluid Flow in Small Quantities

*featuring a back flow check valve and flow control valve



\$13.00 each, net consumer, F. O. B., Cornwells Heights, Bucks County, Pa. In ordering, always state Fig. No., Meter Size, and Scale Marking.

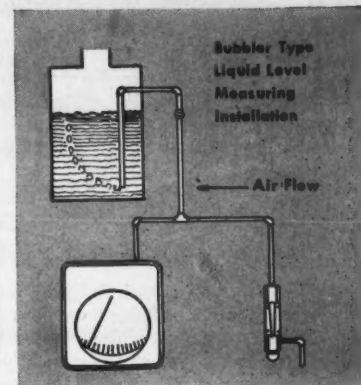


Here's a really new type Rotameter—the SK Fig. 1846CV Purge Rotameter. It's small (weighs 1/2 lb.) and inexpensive, yet particularly well designed and sturdily constructed with a one-piece body. It is ideal for use in indicating and manually controlling fluid flow in low flow ranges where good reproducibility but only moderate actual metering accuracy are required.

With this small, variable area type flow meter, the rate of flow of fluid passing through the meter is indicated by the position of a ball float moving in a tapered glass meter tube. The rate of flow is read in reference to the center of the ball float on a scale mounted alongside of the meter tube.

Typical applications include the indication of—

- ... flow of supply air in Bubbler Type Liquid Level Measuring Installations, see drawing.
- ... flow of purge fluid, generally water or air, in the pipelines connecting orifices, venturi tubes, or nozzles to differential head flow meters.
- ... flow of transparent purge fluid to sight glass indicators of Rotameters measuring the flow of opaque fluids.
- ... flow of purge fluid to indicator extensions of indicating Rotameters or to extension wells of Rotameters with electric or pneumatic transmitters where the



process fluid carries slurries, tends to settle out crystals, or may form surface coatings.

... flow of sample fluid to measuring installations for continuous analysis of fluids.

Special features of the Purge Rotameter include—

- ... a Back Flow Check Valve to positively prevent back flow of process fluid.
- ... a Flow Control Valve for providing sensitive control of fluid flow through the meter over the entire flow range of the meter at differential pressures between 1 to 100 psi across the control valve.
- ... a rigid one-piece meter body which will withstand rough handling in pipe installations and effectively protect the glass tube.
- ... a design particularly suitable for installing directly in pipelines or mounting on instrument panels or in larger instrument cases.

Price, as noted is \$13.00 each, net consumer, F.O.B., Cornwells Heights, Bucks County, Pa. Order now.

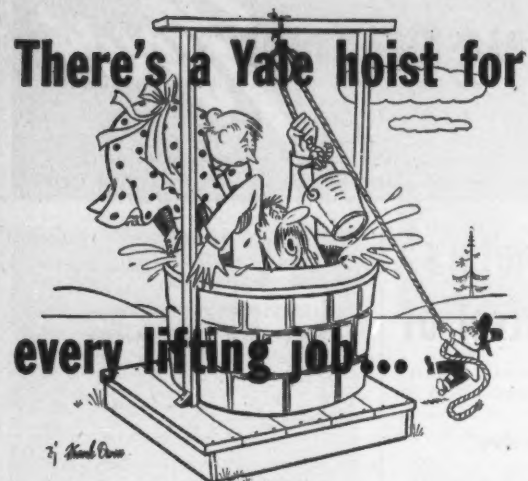
Meter		Flow Conn.	Rotor Type	Flow Ranges		Pressure Drop	Scale Marking
Type	Size			Water at 70° F	Air at 10 psig & 70° F		
Fig. No.	No.	Inches	No.	gph	cfh	psi	
1846CV	03RZ	1/8 NPT	RB033		.2-2	.8-1	.2-2
	01RZ		RB010	.4-4		1.3-1.5	.4-4
	1RZD		RB10	.1-1 † 1-8	.1-2 † 2-30	1.5-2	0-10

Note: Meter and valve bodies are made of anodized aluminum. Control valve shaft is made of stainless steel. Maximum Operating Temperature is 200° F. Maximum Operating Pressure is 200 psig.

† The low and high flow ranges are obtained in the lower and upper half of the double taper meter tube respectively.



When inquiring check CP 2352 on handy form, pgs. 2-3

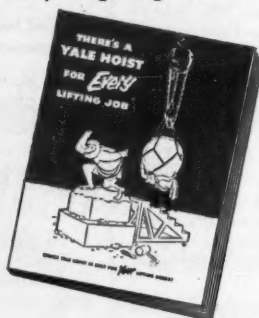


Whether your company's lifting requirements call for one, readily portable hand hoist to be used occasionally...or a plant-wide system of trolley-mounted electric hoists, you can best meet your needs with YALE. Because YALE makes the most complete line...ranging from giant hoists that will lift 40 tons to an all-aluminum hoist weighing a scant 36 lbs. and which delivers an almost unbelievable 95% mechanical efficiency.

Get the whole story...get your FREE copy of the NEW YALE HOIST Book by completing the coupon and mailing today.

You need this Free Book if:

- You specify or buy hoists
- You use hoists in any phase of your company's operation
- You aren't satisfied with your present hoisting equipment



Yale Hoists are sold exclusively through industrial distributors

YALE

MATERIALS HANDLING EQUIPMENT

*Registered in U. S. Patent Office

MAIL THIS COUPON TODAY

The YALE & TOWNE Manufacturing Co., Dept. 127
Roosevelt Blvd. and Haldeman Ave., Phila. 15, Pa.

Please send me my FREE copy of the
Yale Hoist Users and Buyers Guide.

Company _____
Name _____ Title _____
Street _____ City _____ State _____

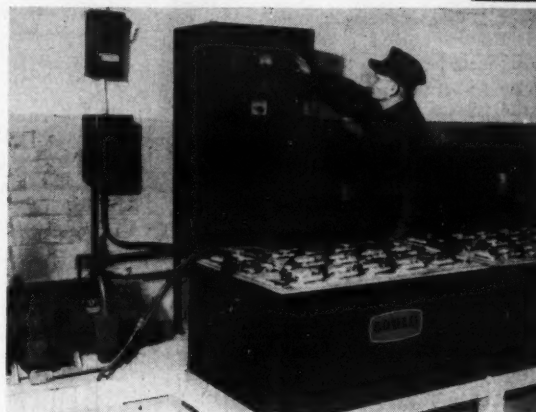
In Canada write: The Yale & Towne Mfg. Co.,
St. Catharines, Ontario, Canada

GAS, ELECTRIC, DIESEL LIFT TRUCKS • WORKSAVERS
HAND TRUCKS • HAND AND ELECTRIC HOISTS • PUL-LIFTS

When inquiring check CP 2353 on handy form, pgs. 2-3

material
handling

Good Maintenance Program Increases Storage Battery Life By as Much as 50 Per Cent



Five charging stations are provided for electric hand truck batteries. Here a member of the battery room crew uses a jib beam to spot a battery for its daily charge.

One of the two motor-generator charging stations for the large lift truck batteries. At charging stations, standard washing and water addition procedures help careful daily charging (and weekly equalizing) to prolong battery life

With accurate records and adherence to manufacturer's "tips", company gets 5 to 6 years' service instead of 3 or 4

BY COORDINATING a pin-point records system with an efficient maintenance program, the Victor Chemical Works at Chicago Heights, Ill. has realized a 50 per cent increase in the life of its industrial truck storage batteries. Specifically, five to six years of service are now possible, instead of the usual 3½ to four.

Initial step which makes this possible was taken sometime ago when the com-

pany installed a modern materials handling system to move palletized loads of bagged phosphates and other chemicals from more than 50 packaging points over routes ranging up to 500' for tiering in the warehouse.

At that time, the company purposely specified industrial truck batteries of slightly greater number and capacity (about 10 per cent) than was strictly necessary. Maintenance of these bat-



teries
gestic
manu
Mobi
powe

BATT	M.E.
7/6	7/6
7-7	7-7
7-11	7-11
7-12	7-12
7-14	7-14
7-15	7-15
7-16	7-16
7-17	7-17
7-17	7-17
7-22	7-22
7-23	7-23
7-24	7-24

Da
Ne
ch

sever
lb ca
whic

Equal
the
and
preca
omm
with
thou
point

Coup
batte
ever
time
on c
the p

Spec
main
— a
char
for
extr
worl
tag
mus

The
card
mate
show
char
spec
in s
char
read

For
driv
repa
or v
tain
truc

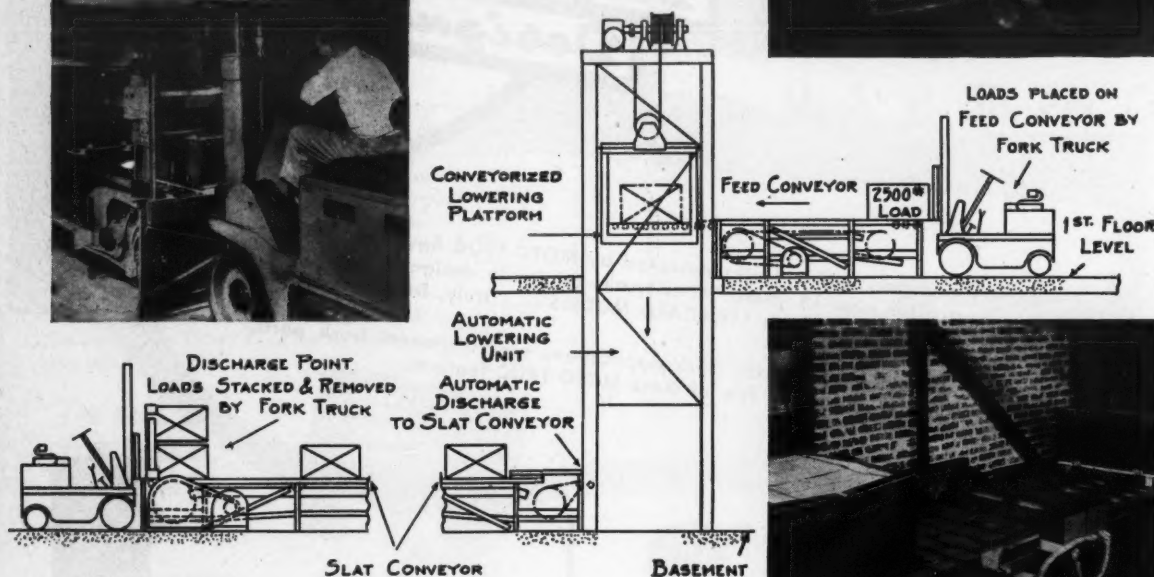
teries was closely watched and recorded, and suggestions made by field engineers of the battery manufacturer were followed religiously.

Mobile equipment includes three 4000-lb battery-powered lift trucks served by eight batteries;

Battery #12 - Amps. 550										Make GOULD																													
No. Cells 18										Purchased 8-50										Charge Rate 27										Fm. 27									
CHARGING																																							
START										FINISH										TIME																			
DATE	TIME	DAY	SS	DATE	TIME	DAY	SS	DATE	TIME	DAY	SS	DATE	TIME	DAY	SS	DATE	TIME	DAY	SS	DATE	TIME	DAY	SS	DATE	TIME	DAY	SS	DATE	TIME	DAY	SS								
7-14	11:30	W	79	7-15	11:30	W	79	7-16	11:30	W	79	7-17	11:30	W	79	7-18	11:30	W	79	7-19	11:30	W	79	7-20	11:30	W	79	7-21	11:30	W	79								
7-22	11:30	W	79	7-23	11:30	W	79	7-24	11:30	W	79	7-25	11:30	W	79	7-26	11:30	W	79	7-27	11:30	W	79	7-28	11:30	W	79	7-29	11:30	W	79								
7-30	11:30	W	79	7-31	11:30	W	79	8-1	11:30	W	79	8-2	11:30	W	79	8-3	11:30	W	79	8-4	11:30	W	79	8-5	11:30	W	79	8-6	11:30	W	79								
8-7	11:30	W	79	8-8	11:30	W	79	8-9	11:30	W	79	8-10	11:30	W	79	8-11	11:30	W	79	8-12	11:30	W	79	8-13	11:30	W	79	8-14	11:30	W	79								
8-15	11:30	W	79	8-16	11:30	W	79	8-17	11:30	W	79	8-18	11:30	W	79	8-19	11:30	W	79	8-20	11:30	W	79	8-21	11:30	W	79	8-22	11:30	W	79								
8-23	11:30	W	79	8-24	11:30	W	79	8-25	11:30	W	79	8-26	11:30	W	79	8-27	11:30	W	79	8-28	11:30	W	79	8-29	11:30	W	79	8-30	11:30	W	79								
8-31	11:30	W	79	9-1	11:30	W	79	9-2	11:30	W	79	9-3	11:30	W	79	9-4	11:30	W	79	9-5	11:30	W	79	9-6	11:30	W	79	9-7	11:30	W	79								
9-8	11:30	W	79	9-9	11:30	W	79	9-10	11:30	W	79	9-11	11:30	W	79	9-12	11:30	W	79	9-13	11:30	W	79	9-14	11:30	W	79	9-15	11:30	W	79								
9-16	11:30	W	79	9-17	11:30	W	79	9-18	11:30	W	79	9-19	11:30	W	79	9-20	11:30	W	79	9-21	11:30	W	79	9-22	11:30	W	79	9-23	11:30	W	79								
9-24	11:30	W	79	9-25	11:30	W	79	9-26	11:30	W	79	9-27	11:30	W	79	9-28	11:30	W	79	9-29	11:30	W	79	9-30	11:30	W	79	10-1	11:30	W	79								
10-2	11:30	W	79	10-3	11:30	W	79	10-4	11:30	W	79	10-5	11:30	W	79	10-6	11:30	W	79	10-7	11:30	W	79	10-8	11:30	W	79	10-9	11:30	W	79								
10-10	11:30	W	79	10-11	11:30	W	79	10-12	11:30	W	79	10-13	11:30	W	79	10-14	11:30	W	79	10-15	11:30	W	79	10-16	11:30	W	79	10-17	11:30	W	79								
10-18	11:30	W	79	10-19	11:30	W	79	10-20	11:30	W	79	10-21	11:30	W	79	10-22	11:30	W	79	10-23	11:30	W	79	10-24	11:30	W	79	10-25	11:30	W	79								
10-26	11:30	W	79	10-27	11:30	W	79	10-28	11:30	W	79	10-29	11:30	W	79	10-30	11:30	W	79	10-31	11:30	W	79	11-1	11:30	W	79	11-2	11:30	W	79								
11-3	11:30	W	79	11-4	11:30	W	79	11-5	11:30	W	79	11-6	11:30	W	79	11-7	11:30	W	79	11-8	11:30	W	79	11-9	11:30	W	79	11-10	11:30	W	79								
11-11	11:30	W	79	11-12	11:30	W	79	11-13	11:30	W	79	11-14	11:30	W	79	11-15	11:30	W	79	11-16	11:30	W	79	11-17	11:30	W	79	11-18	11:30	W	79								
11-19	11:30	W	79	11-20	11:30	W	79	11-21	11:30	W	79	11-22	11:30	W	79	11-23	11:30	W	79	11-24	11:30	W	79	11-25	11:30	W	79	11-26	11:30	W	79								
11-27	11:30	W	79	11-28	11:30	W	79	11-29	11:30	W	79	11-30	11:30	W	79	12-1	11:30	W	79	12-2	11:30	W	79	12-3	11:30	W	79	12-4	11:30	W	79								
12-5	11:30	W	79	12-6	11:30	W	79	12-7	11:30	W	79	12-8	11:30	W	79	12-9	11:30	W	79	12-10	11:30	W	79	12-11	11:30	W	79	12-12	11:30	W	79								
12-13	11:30	W	79	12-14	11:30	W	79	12-15	11:30	W	79	12-16	11:30	W	79	12-17	11:30	W	79	12-18	11:30	W	79	12-19	11:30	W	79	12-20	11:30	W	79								
12-21	11:30	W	79	12-22	11:30	W	79	12-23	11:30	W	79	12-24	11:30	W	79	12-25	11:30	W	79	12-26	11:30	W	79	12-27	11:30	W	79	12-28	11:30	W	79								
12-29	11:30	W	79	12-30	11:30	W	79	12-31	11:30	W	79	1-1	11:30	W	79	1-2	11:30	W	79	1-3	11:30	W	79	1-4	11:30	W	79	1-5	11:30	W	79								
1-6	11:30	W	79	1-7	11:30	W	79	1-8	11:30	W	79	1-9	11:30	W	79	1-10	11:30	W	79	1-11	11:30	W	79	1-12	11:30	W	79	1-13	11:30	W	79								
1-14	11:30	W	79	1-15	11:30	W	79	1-16	11:30	W	79	1-17	11:30	W	79	1-18	11:30	W	79	1-19	11:30	W	79	1-20	11:30	W	79	1-21	11:30	W	79								
1-22	11:30	W	79	1-23	11:30	W	79	1-24	11:30	W	79	1-25	11:30	W	79	1-26	11:30	W	79	1-27	11:30	W	79	1-28	11:30	W	79	1-29	11:30	W	79								
1-30	11:30	W	79	1-31	11:30	W	79	2-1	11:30	W	79	2-2	11:30	W	79	2-3	11:30	W	79	2-4	11:30	W	79	2-5	11:30	W	79	2-6	11:30	W	79								
2-7	11:30	W	79	2-8	11:30	W	79	2-9	11:30	W	79	2-10	11:30	W	79	2-11	11:30	W	79	2-12	11:30	W	79	2-13	11:30	W	79	2-14	11:30	W	79								
2-15	11:30	W	79	2-16	11:30	W	79	2-17	11:30	W	79	2-18	11:30	W	79	2-19	11:30	W	79	2-20	11:30	W	79	2-21	11:30	W	79	2-22	11:30	W	79								
2-23	11:30	W	79	2-24	11:30	W	79	2-25	11:30	W	79	2-26	11:30	W	79	2-27	11:30	W	79	2-28	11:30	W	79	2-29	11:30	W	79	2-30	11:30	W	79								
2-31	11:30	W	79	3-1	11:30	W	79	3-2	11:30	W	79	3-3	11:30	W	79	3-4	11:30	W	79	3-5	11:30	W	79	3-6	11:30	W	79	3-7	11:30	W	79								
3-8	11:30	W	79	3-9	11:30	W	79	3-10	11:30	W	79	3-11	11:30	W	79	3-12	11:30	W	79	3-13	11:30	W	79	3-14	11:30	W	79	3-15	11:30	W	79								
3-16	11:30	W	79	3-17	11:30	W	79	3-18	11:30	W	79	3-19	11:30	W	79	3-20	11:30	W	79	3-21	11:30	W	79	3-22	11:30	W	79	3-23	11:30	W	79								
3-24	11:30	W	79	3-25	11:30	W	79	3-26	11:30	W	79	3-27	11:30	W	79	3-28	11:30	W	79	3-29	11:30	W	79	3-30	11:30	W	79	3-31	11:30	W	79								
4-1	11:30	W	79	4-2	11:30	W	79	4-3	11:30	W	79	4-4	11:30	W	79	4-5	11:30	W	79	4-6	11:30	W	79	4-7	11:30	W	79	4-8	11:30	W	79								
4-9	11:30	W	79	4-10	11:30	W	79	4-11	11:30	W	79	4-12	11:30	W	79	4-13	11:30	W	79	4-14	11:30	W	79	4-15	11:30	W	79	4-16	11:30	W	79								
4-17	11:30	W	79	4-18	11:30	W	79	4-19	11:30	W	79	4-20	11:30	W	79	4-21	11:30	W	79	4-22	11:30	W	79	4-23	11:30	W	79	4-24	11:30	W	79								
4-25	11:30	W	79	4-26	11:30	W	79	4-27	11:30	W	79	4-28	11:30	W	79	4-29	11:30	W	79	4-30	11:30	W	79	5-1	11:30	W	79	5-2	11:30	W	79								
5-3	11:30	W	79	5-4	11:30	W	79	5-5	11:30	W	79	5-6	11:30	W	79	5-7	11:30	W	79	5-8	11:30	W	79	5-9	11:30	W	79	5-10	11:30	W	79								
5-11	11:30	W	79	5-12	11:30	W	79	5-13	11:30	W	79	5-14	11:30	W	79	5-15	11:30	W	79	5-16	11:30	W	79	5-17	11:30	W	79	5-18	11:30	W	79								
5-19	11:30	W	79	5-20	11:30	W	79	5-21	11:30	W	79	5-22	11:30	W	79	5-23	11:30	W	79	5-24	11:30	W	79	5-25	11:30	W	79	5-26	11:30	W	79								
5-27	11:30	W	79	5-28	11:30	W	79	5-29	11:30	W	79	5-30	11:30	W	79	5-31	11:30	W	79	6-1	11:30	W	79	6-2	11:30	W	79	6-3	11:30	W	79								
6-4	11:30	W	79	6-5	11:30	W	79	6-6	11:30	W	79	6-7	11:30	W	79	6-8	11:30	W	79	6-9	11:30	W	79	6-10	11:30	W	79	6-11	11:30	W	79								
6-12	11:30	W	79	6-13	11:30	W	79	6-14	11:30	W	79	6-15	11:30	W	79	6-16	11:30	W	79	6-17	11:30	W	79	6-18	11:30	W	79	6-19	11:30	W	79								
6-20	11:30	W	79	6-21	11:30	W	79	6-22	11:30	W	79	6-23	11:30	W	79	6-24	11:30	W	79	6-25	11:30	W	79	6-26	11:30	W	79	6-27	11:30	W	79								
6-28	11:30	W	79	6-29	11:30	W	79	6-30	11:30	W	79	7-1	11:30	W	79	7-2	11:30	W	79	7-3	11:30	W	79	7-4	11:30	W	79	7-5	11:30	W	79								
7-6	11:30	W	79	7-7	11:30	W	79	7-8	11:30	W	79	7-9	11:30	W	79	7-10	11:30	W	79	7-11	11:30	W	79	7-12	11:30	W	79	7-13	11:30	W	79								
7-14	11:30	W	79	7-15	11:30	W	79	7-16	11:30	W																													

only through *Engineering*
can *Efficiency* be achieved...
up **87½%**

for department of a
LARGE EASTERN CAN COMPANY*



Like many foresighted manufacturing companies of today, this large eastern can manufacturing company, is constantly aware of in-plant materials handling as a major operating cost. The diagram and pictures present Gifford-Wood's solution to their problem of handling materials to storage. Long, empty return runs of the fork trucks used was only one aspect of the previous method of operation which was unduly expensive. Through the new G-W System, 2500-lb. bundles of steel sheets which formerly required eight hours to unload and store are now handled in one!

Working with Wigton-Abbott Corporation, Con-

sulting Engineers, Gifford-Wood applied the materials handling knowledge for the solution of a costly problem—and this is only typical of many such engineered installations. All elements of such an installation (length of horizontal conveyor travel, raising or lowering to floors above or below, etc.) are, of course, designed to best suit the particular conditions encountered.

The G-W Materials Handling Engineer in your area will be glad to discuss the most economical means of materials flow in your plant. Call on him—it may well be the first step toward higher profits through lower operating and maintenance costs.

*Company name available on request.

GIFFORD-WOOD Co.

Since 1814 • Hudson, New York

NEW YORK 17, N. Y. ST. LOUIS 1, MO. CHICAGO 6, ILL.
420 LEXINGTON AVE. RAILWAY EXCHANGE BLDG. 565 W. WASHINGTON ST.

When you think of materials handling—Think of Gifford-Wood

When inquiring check CP 2355 on handy form, pgs. 2-3

MATERIAL HANDLING

(Continued from preceding page)

Standard washing procedures have been set up, and water is added to cells and specific gravity readings are taken daily. By avoiding irregular addition of water, the crew prevents formation of scum on the electrolyte, and of corrosion on terminals and cell covers. Equalizing charges are applied every Saturday, when the plant load is lightest.

Water is added to cells by a hydrometer from jars filled from a carboy of distilled water; the carboys are swung, for ease of filling, in a "home-made" steel cradle pivoted above the center of gravity. Thus, should a maintenance man lose his grip on the cradle, the carboy returns to an upright position. Hoses bracketed on the wall near the battery rack furnish water and compressed air for washing batteries.

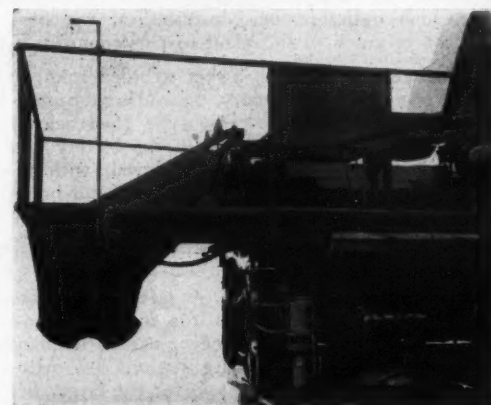
In three ways, this seeming over-investment has contributed directly to the low operating costs now being recorded: 1) it has given the system a "cushion" to allow for overtime operations. (The plant operates seven days.) 2) It compensates for decreased efficiency as batteries approach the end of their useful lives; and 3) it allows an ample safety factor against possible slight inequalities in charging methods.

(Battery maintenance program practised at Victor Chemical Works was developed in cooperation with Gould-National Batteries, Inc., Dept. CP, Stone and Calhoun Streets, Trenton 7, N. J. . . . or to secure more information reader may simply check CP 2356 on handy Reader Service slip between pages two and three.)

Twin clam gate setup on hopper keeps segregation down in pugmill flow

Design and installation of a new type truck loading hopper for manufacturer's Continuflo line of asphalt plants have been announced.

Mixer units 51 and 101 continuous process plants are both equipped with twin clam gates. The hop-



Twin clam gates speed unloading

MATERIAL HANDLING

per permits discharge of materials from the pugmill into trucks with least possible segregation of mix. Gates are steam-cylinder actuated by means of a lever extending up to the operator's platform.

Hopper on the small mixer holds more than a ton of material; hopper on large mixer holds approximately two tons. Thus, there is ample time for changing trucks without shutting down the machine. Together with the addition of twin clam gates, the increased hopper capacities permit operators to unload a uniform, non-segregated mix at a steady pace.

(Development of a subsidiary of Poor & Company, Pioneer Engineering Works, Inc., Dept. CP, 1515 Central Ave., Minneapolis 13, Minn. . . or for more information check CP 2357 on handy form, pages 2 and 3.)

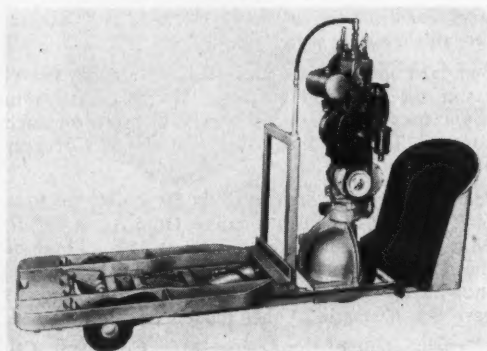
Hydraulic power replaces manual effort on skid trucks and saves time . . .

pumping unit transmits 1000 psi to permit 360° rotation on driving and steering turret

Uses: For operations requiring skid and pallet low-lift trucks.

Features: Hydraulic pump which replaces manual effort eliminates employee fatigue and saves time required per trip.

Description: Manufacturer's heavy duty Skid Lift Model DHP (illustrated) and the Pallet Toter Model DFP are both equipped with hydraulic



Lifting accomplished by hydraulic pump

pumps installed directly on the engine. Pumping units transmit a pressure to 1000 psi through a 360° swivel elbow fitting and flexible tube to the cylinder. Fitting permits full 360° rotation of the driving and steering power turret.

In addition to power lift, the DHP is a heavy duty design of 4500 lb capacity, and is also available with the heavy duty chassis but with hand jack, if preferred.

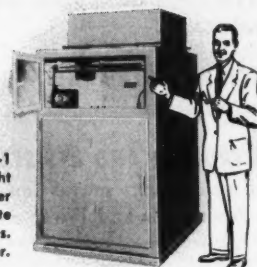
(Development of the Truck-Man Div., The Knickerbocker Co., Dept. CP, 568 Liberty St., Jackson, Mich. . . or for more information check CP 2358 on handy form, pages 2 and 3.)



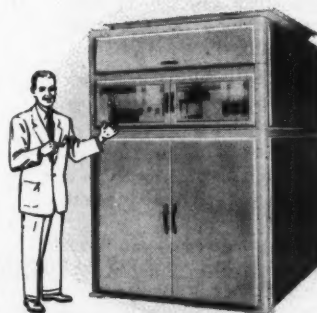
Model GLW-O
Loss-in-Weight
Gravimetric Feeder
for maximum rate of
100 lbs. per hour.

NEW FEEDER

...for process systems



Model GLW-1
Loss-in-Weight
Gravimetric Feeder
for maximum rate
of 1,000 lbs.
per hour.



Model GLW-2
Loss-in-Weight
Gravimetric Feeder
for maximum rate
of 4,000 lbs.
per hour.

This Omega Model GLW-O is a small gravimetric feeder for dry materials. It incorporates all the quality features that have made Omega Feeders of this type famous throughout the Chemical Industry. Omega offers the only COMPLETE line of Loss-in-Weight Gravimetric Feeders.

FEATURES

- High accuracy — within $\pm 1\%$ by weight
- Wide feeding range (100 to 1)
- Hairline feed rate adjustment (up to 100 lbs. per hour) from a single dial
- Large hopper capacity — 5 cu. ft.
- Sentinel alarms to warn of over or under feeding
- Direct reading totalizer shows amount of material fed
- Easily adapted for automatic proportional pacing with chemical feeders, proportioning pumps, flow meters, process machinery, etc.
- Enclosed, dust-tight housing . . . interior cabinet illumination.

Want more facts?

OMEGA MACHINE COMPANY
387 Harris Ave., Providence 1, R. I.

- ☐ Send Bulletin 30-K4 giving full details on Omega Model GLW-O Loss-in-Weight Gravimetric Feeder for dry materials.
- ☐ Send Bulletin 30-H12—describing Models GLW-1 and GLW-2 Loss-in-Weight Gravimetric Feeders (for larger capacities).

Name _____
Company _____
Street _____
City _____ State _____

OMEGA
THE LAST WORD IN FEEDERS

When inquiring check CP 2359 on handy form, pgs. 2-3

Send
Coupon

new BAKER gas-O-matic

... ELECTRIC TRUCK OPERATING ECONOMY
 GAS TRUCK INITIAL COST !



gas-O-matic is a revolutionary new gasoline-powered fork truck with electric motor drive—designed from engine to drive wheels to incorporate the best features of both gas and electric trucks.

The secret of its outstanding performance and amazing operating economy is the new Baker GAS-O-MATIC transmission system. A specially designed variable voltage generator provides an incredibly smooth *unbroken* acceleration curve—directly controlled by the gas throttle.

ELIMINATION OF CLUTCH cures the biggest maintenance headache of gas-powered trucks.

ELIMINATION OF CLUTCH AND GEAR SHIFT prevents jerky starts and "step-ladder" acceleration.

ELIMINATION OF CONTROLLER AND RESISTANCE BANKS of electric and gas-electric trucks means fewer moving parts and results in less down time and lower maintenance costs.

gas-O-matic has the smoothest acceleration and best "inching" characteristics of any fork truck, regardless of type of fuel or transmission. It is ideal for ramp work, for tiering, and for long or short haul operations. In fact it will perform almost any fork truck job better and cheaper.



gas-O-matic will do everything a comparable straight gas truck can do—do most of it better and more economically . . . plus some things that straight gas cannot do.

It will do almost everything a battery-powered fork truck can do—and some of it better . . . plus a few things that battery-power cannot do!

—Yet it costs little more* than a straight gas truck of the same capacity, and only about half as much as a battery-powered electric with charger and two batteries!

* **gas-O-matic** model illustrated, 4,000 lb. capacity costs only **\$4895.00**

write for descriptive Bulletin No. 1344

THE BAKER-RAULANG COMPANY
 1208 WEST 80th STREET • CLEVELAND 2, OHIO

The Baker-Lull Corporation, Subsidiary, Minneapolis, Minnesota
 Material Handling and Construction Equipment

Baker

industrial trucks

MATERIAL HANDLING

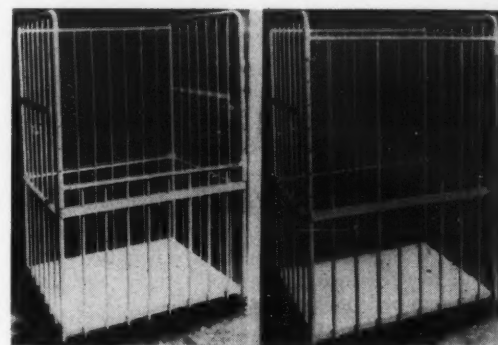
Telescoping side on bundle truck keeps load intact and speeds unloading . . .

with removable wood floor, unit has door that stops every six inches

Uses: For handling loose packages and bundles, especially those which do not lend themselves to easy, integrated stacking.

Features: Unit has a low front wall for ease in unloading, loading, and a telescoping door that closes the wall entirely for maximum capacity and load carrying efficiency. Door has stops every six inches for partial closing.

Description: Designed for maximum use of floor and aisle space, truck is available in three



Door stops every six inches for partial closing

standard sizes and two wall types. It is all-welded steel construction, is easily cleaned, and has removable cleated wood floor.

Standard models are equipped with a 4" swivel caster on each end and two 5" rigid casters in the center — or one 4" swivel caster on each corner. Truck is finished with two coats of gray enamel.

Inside dimensions range from 30 x 40" to 30 x 60"; outside dimensions range from 32 x 42" to 32 x 62". Height above casters is 55". Three of the six models in this series have vertical bars (as shown) for wall construction; three other models have 6 x 6" mesh. Other models can be designed.

(Development of the Leebaw Mfg. Co., Dept. CP, 65 Wayne St., Youngstown 2, Ohio . . . or for more information check CP 2361 on handy form, pages 2 and 3)

No need to search high and wide . . .

for more information on something you read in these editorial articles. A letter to the company listed at the end of the article . . . or a mark on the Reader Service slip . . . will bring you what you want. This idea originated with Putman Publishing Co. many years ago . . . to help busy men like you!

THE EDITORS

When inquiring check CP 2360 on handy form, pgs. 2-3

MATERIAL HANDLING

Heavy loads don't stop swivel caster . . .

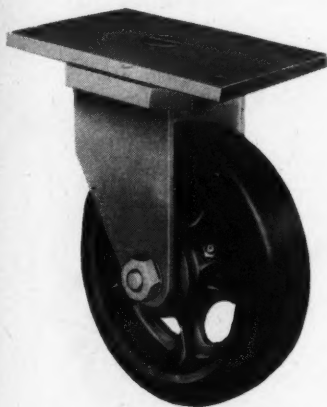
precision machined casters are available in 6, 8, 10" sizes

Uses: For mobile hand trucks, trailer trucks and bins.

Features: Easy swiveling under heavy loads is accomplished through combination of large-diameter outer ball race, precision machining for pressure lubrication, and Timken thrust bearing to relieve load on countersunk king-bolt.

Description: Manufacturer's Series "27" casters are a double race swivel of heavy steel plate welded construction and are available in 6, 8, and 10" sizes.

Caster is standard with a replaceable bolt axle. It is available with semi-steel roller bearing wheels, vulcanized rubber-tired



Of heavy steel plate welded construction

wheels, and molded plastic wheels in the 6" size. The 8 and 10" sizes are available with the semi-steel roller bearing wheels, the vulcanized rubber-tired roller bearing wheels, and molded plastic wheels.

(Development of the Fairbanks Co., Dept. CP, 393 Lafayette St., New York 3, N. Y. . . . or to secure more information reader may simply check CP 2362 on convenient Reader Service slip between pages two and three.)

For more information on product at right, specify CP 2363 . . . see information request blank between pages 2 - 3.

MR. PRODUCTION MANAGER:

are you looking for a way to feed more output capacity *into* your plant?

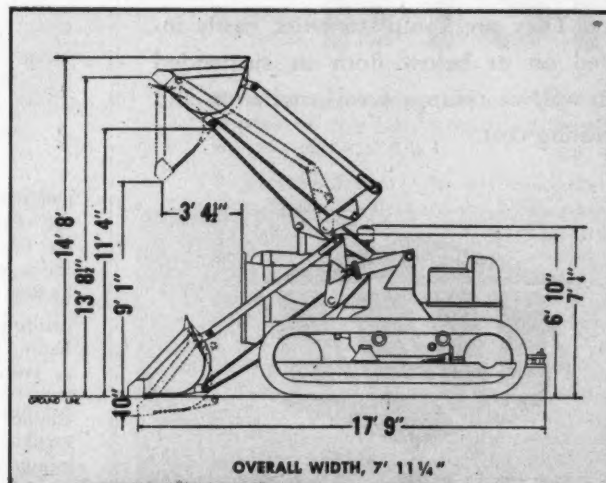
This Allis-Chalmers HD-9G Tractor Shovel might well be the answer. It offers the same outstanding versatility and performing ability as the 1-yd. HD-5G — the recognized standard of comparison — *plus* bigger capacity, higher reach and more power. With the HD-9G, one man can move more material per shift . . . handle a wider variety of jobs inside and out.

loads fast with big two-yard bucket

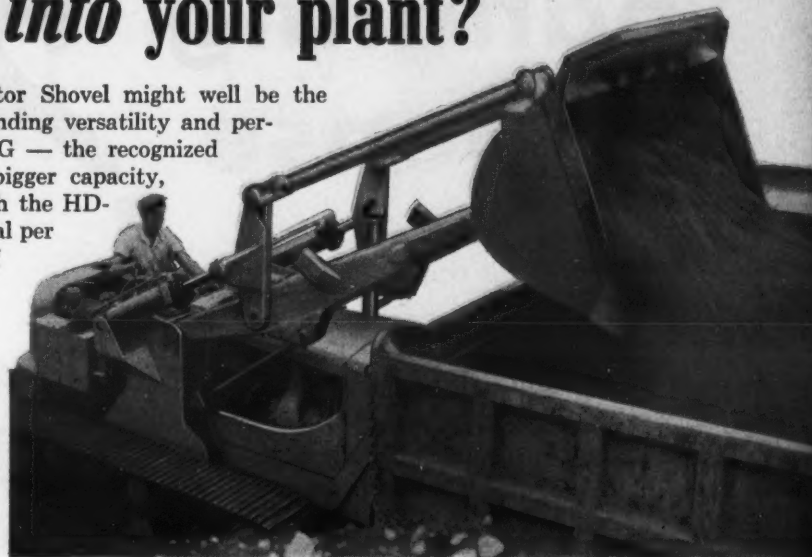
The HD-9G digs, stockpiles, loads trucks, feeds hoppers — handles any bulk material two big yards at a scoop. Special 3½-yd. light materials bucket almost doubles output in materials weighing not more than 1400 lb. per cu. yd. Exclusive Allis-Chalmers shift pattern further speeds loading by allowing operator to go from low forward to fast reverse with one simple gear shift.

high dumping height — 11 ft. 4 in. Under Bucket Hinge

Here is a Tractor Shovel that reaches for extra jobs. With bucket fully raised, it dumps into high bins. Also, tractor can work right up on storage piles, making it possible to put many more yards of material in a given area.



Ask your Allis-Chalmers Dealer to show you the many ways this HD-9G has helped others step up production.



works in close quarters — No Bulky Superstructure

Compact design, plus the ability to turn in its own track length enables the HD-9G to work in confined areas or where there is little more than tractor-height head room.



powerful — 72 brake hp.

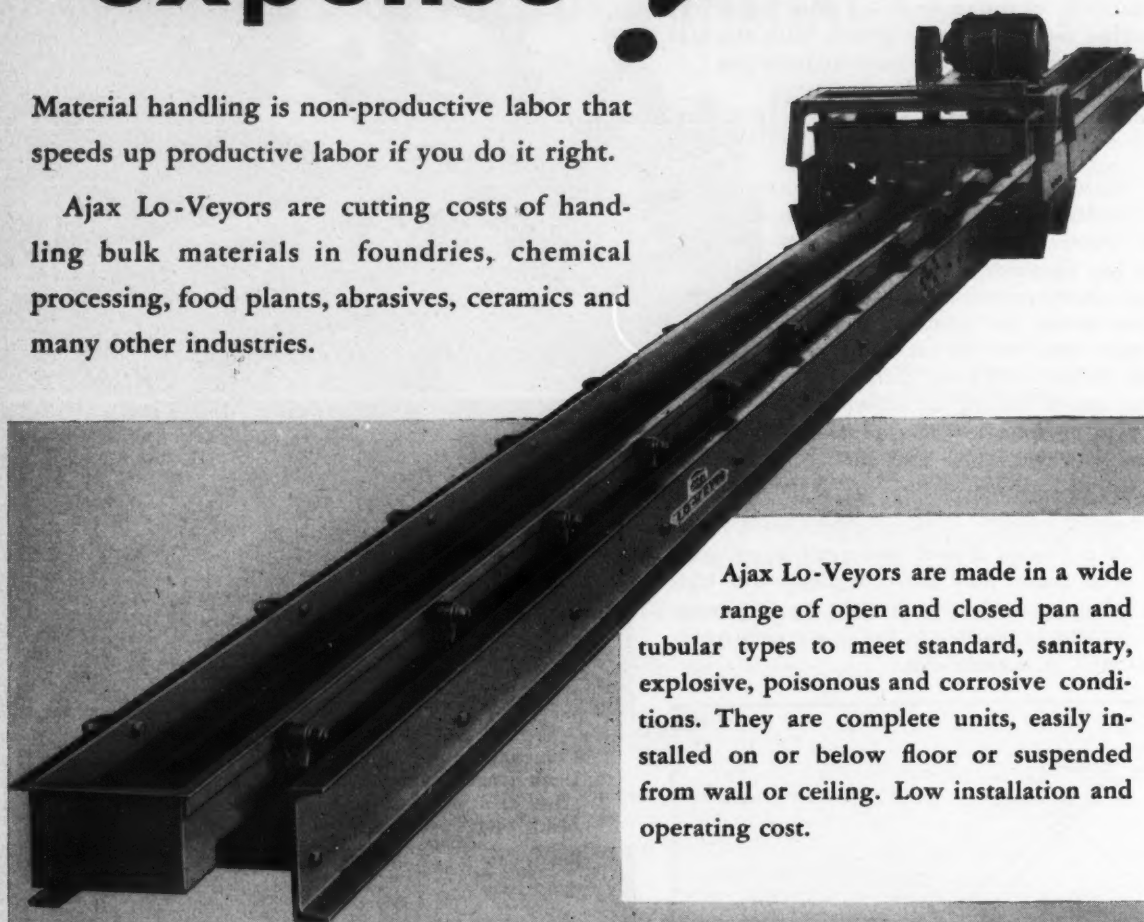
The HD-9G has the power, weight and traction to handle tough excavating on new construction, maintain yard roads and parking lots, spot railroad cars, lift, carry, push or pull heavy loads of all kinds.

ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

material handling expense ?

Material handling is non-productive labor that speeds up productive labor if you do it right.

Ajax Lo-Veyors are cutting costs of handling bulk materials in foundries, chemical processing, food plants, abrasives, ceramics and many other industries.



Ajax Lo-Veyors are made in a wide range of open and closed pan and tubular types to meet standard, sanitary, explosive, poisonous and corrosive conditions. They are complete units, easily installed on or below floor or suspended from wall or ceiling. Low installation and operating cost.

*Write for your personal copy
of Bulletin 39*



AJAX FLEXIBLE COUPLING CO. INC.

WESTFIELD, N. Y.

MATERIAL HANDLING

Labor-saving, low gravity center points are features of special hopper car built for bulk materials . . .

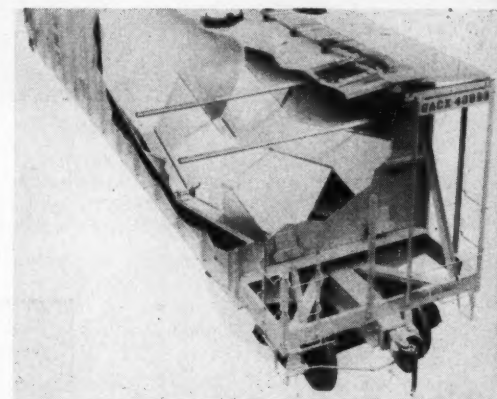
with watertight roof loading hatches, unit is made in sizes of 2000, 2600 and 3600 cu ft

Uses: For bulk shipment and handling of dry, granular or powdered materials, such as feedstuffs, chemicals, starches and similar commodities by rail.

Features: Savings in labor, containers, dunnage are reported by manufacturer in addition to improved sanitation and less danger of contamination.

Description: Because of its basically different type of construction, the Airslide hopper car can be built in sizes of 2000, 2600 and 3600 cu ft to cover whole range of powdered commodities having bulk densities in the neighborhood of 40 lb/cu ft. Height of center of gravity above the rail is 84 inches, while hopper bottom is 14" above the rail.

Essential part of the Airslide is a fabric of special design stretched over a U-shaped shallow steel channel. Channel below the fabric forms a plenum chamber into which air is introduced at approx 1 lb/sq in, and in varying quantities, depending on the



View of compartmented bins shows slope sheets

material to be handled. The Air slide slopes toward the center of the car, and as air is forced through the fabric, slowly permeating commodity above the fabric, the lading is aerated and fluidized, causing it to flow like water to the unloading point.

Loading is done by gravity through the roof hatches. Lading may be moved from the car by either gravity or pneumatics into any conventional conveying system. Only essential piece of equipment which the shipper requires is a small, low-pressure blower, capable of delivering 200 cu ft or more of air per minute.

In order to insure a minimum of product retention in the car upon completion of each unloading, the car's design embodies the features of all-welded construction and 60° slope sheets. Optionally, a wax lining, non-toxic, possessing very good corrosion-resistant properties, can provide the car interior with a very smooth surface.

When inquiring check CP 2364 on handy form, pgs. 2-3

MATERIAL HANDLING

(Airslide hopper car was designed in collaboration with the Fuller Company of Catasauqua, Pa. and is manufactured by the General American Transportation Corp., Dept. CP, 135 S. LaSalle St., Chicago 90, Ill. . . . or for more information check CP 2365 on handy form, pages 2 and 3.)

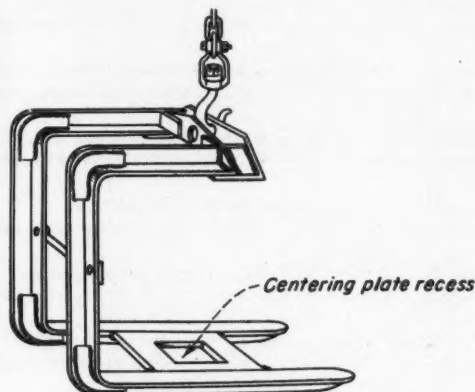
Changing of storage batteries accomplished in 3 min with simple rig . . .

strong steel yoke-hook and monorail hoist are suited for horizontal removal

Uses: Now used at New York's Grand Central Terminal for making battery changes in baggage trucks, unit is particularly handy where batteries must be removed horizontally and when both end and top clearance in the compartment is tight.

Features: Speed is primary feature. Not more than 3 min per truck is allowed for changing batteries at the terminal.

Description: Pick-up element of the lifting device is a large steel yoke-hook welded from simple structural shapes and carried by a monorail hoist. When removing battery from its compartment in a baggage carrier, the bottom of the yoke-hook



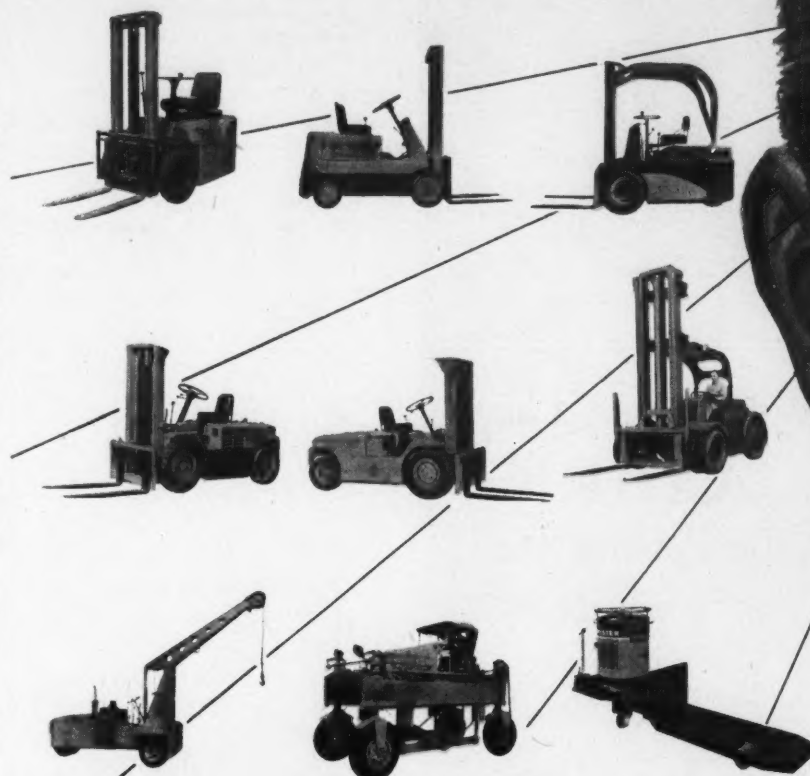
With minimum manual handling, lifting yoke, engaged at the top by a hoist hook, lifts the batteries in or out of their compartments

is slid into the compartment under the battery. A rectangular centering plate (approx 5 x 8 x 1") on the bottom of the battery fits into a recess in the plate welded between two arms of the yoke-hook. This acts as a safety device to prevent battery from shifting position during handling.

After positioning the rig, the battery is lifted slightly with the hoist, moved horizontally out of the compartment, and transported on the monorail to the charging racks.

(Information supplied by the Gould-National Batteries, Inc., Dept. CP, Stone and Calhoun Streets, Trenton 7, N. J. . . . or for more information check CP 2366 on handy Reader Service slip, pages two and three.)

NEW PROFIT-MAKING MATERIALS HANDLING IDEAS



from **HYSTER** one of the oldest names in materials handling

Wherever materials are moved—you'll find Hyster on the job...reducing handling costs by as much as 75%!

Progressive industry leaders everywhere depend upon Hyster Dealers for the NEW profit-building IDEAS in their own particular industry. Because of their everyday contact with all industries, Hyster Dealers are in an advantageous position to originate or pass on these ideas...ideas that so often have changed profit-eating into profit-making situations...ideas that can help you to spot and stop profit leaks in your business!

Hyster—the most complete line of industrial trucks on the market—is brought to you by one of the world's most efficient dealer organizations. Over 300 Hyster Dealers all over the world will be glad to offer you the recommended materials handling

practices in your industry—plus rentals, parts and field service. They also offer recommendations on the use of over 100 attachments which enable your Hyster Lift Truck to handle efficiently almost any type of load—whether it be in the form of bales, bags, bricks, bottles, bundles, boxes, or barrels! Take your first step to higher profits today by calling your Hyster Dealer...or write for Catalog 1258 on Hyster Lift Trucks and Catalog 1266 on Hyster Attachments to:

HYSTER COMPANY

2937 N. E. Clackamas St. Portland 8, Oregon
1037 Myers Street Danville, Illinois

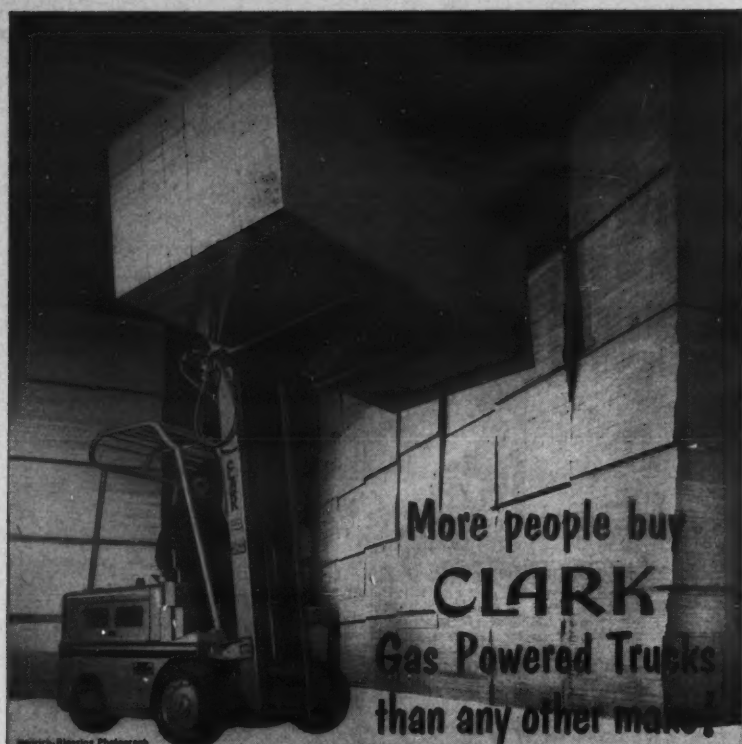


Be Sure to Call HYSTER Before You Buy ANY Lift Truck!

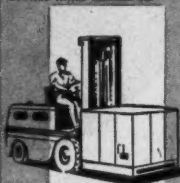
HYSTER COMPANY—Four Factories: Portland, Oregon; Danville, Illinois; Peoria, Illinois; Nijmegen, The Netherlands



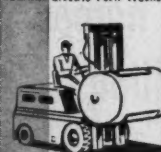
When inquiring check CP 2367 on handy form, pgs. 2-3



Research-Developing Photograph, courtesy of the EDWARD GILLES COMPANY, INC.



CLARK Electric Fork Trucks



CLARK Attachments



CLARK POWERWORKERS

THERE ARE A LOT OF GOOD TRUCKS on the market, and a lot of good arguments for each. But this fact remains: more people buy CLARK gas powered trucks than any other make. Since we produce all power types . . . gas, electric, diesel and L.P. gas . . . we feel we're in a good position to explain why:

CLARK Horsepower is Capacity-Rated To Your Requirements—Why pay for excess horsepower that you'll never use? CLARK gives you five engines, rated according to truck capacity. You get plenty of power for the job, without a lot of gas-consuming excess. When you buy a CLARK in the size that's right for you, you get the proper horsepower, too.

CLARK Flexibility Meets Any Work Condition—A wide range of speeds and a constant source of power enables your gas powered CLARK to handle any work condition. Flexibility means 'round-the-clock performance of normal operations, with a built-in reserve of power for peak loads and emergencies. And for long hauls, you can't beat the speed and economy of the gas powered CLARK.

No matter what your handling requirements are—there's a CLARK machine to do the job. Electric or gas powered fork trucks, POWERWORKER hand trucks, industrial towing tractors—they all give you quality-value for your money. That's why industry buys more CLARKS than any other make of truck. When you're in the market for materials-handling equipment, talk to your local CLARK dealer first. Most people do!

CLARK ELECTRIC, GAS, DIESEL, L.P. GAS FORK TRUCKS AND POWERED HAND TRUCKS • INDUSTRIAL TOWING TRACTORS

INDUSTRIAL TRUCK DIVISION • CLARK EQUIPMENT COMPANY • BATTLE CREEK • MICHIGAN

Please send: ☐ Condensed Catalog ☐ Have Representative Call
☐ Driver Training Movie

Name _____

Firm Name _____

Street _____

City _____

Zone _____

State _____

AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

MATERIAL HANDLING

"Assemble yourself" setup gives extra flexibility to floor truck . . .

slip-fitting of steel sections eliminates nuts and bolts

Uses: For general materials handling requiring use of floor trucks.

Features: Slip-fitting of sections (no nuts or bolts) allows truck to be assembled in five minutes, manufacturer reports. Units may be disassembled again for storage.

Description: Trucks are of all-steel, welded construction with gray enamel finish. Standard shelves are 5/8" plywood bound with steel angle; steel shelves with 1" flange, turned up or down are optional. Shelf



Can be altered to meet changing requirements in plant

and deck size are 20 x 36"; overall truck dimensions are 22 1/2 x 42". Vehicles are equipped with two swivel and two rigid casters with hard rubber ball-bearing wheels. Available in four models, all trucks are equipped with five inch casters with a total capacity of five hundred pounds.

Heavy-duty casters are optional, having 4" hard rubber wheels and a capacity of 1500 lb. Shelves are added or removed as needed. All parts are replaceable and interchangeable without the need for fastenings.

(Development of the Leebaw Manufacturing Company, Department CP, 65 Wayne Avenue, Youngstown 2, Ohio . . . or to secure more information reader may simply check CP 2369 on convenient Reader Service slip between pages 2 and 3.)

Quality Bronze Design



Series I—Heavy duty bronze rotary gear pumps

Oilless bearings 2-23 G.P.M.—0-100 P.S.I. \$14.25-\$29.75 (six pumps)

Series II—Close coupled motor driven bronze pumps

Oilless bearings 2-4 G.P.M.—0-100 P.S.I. \$20.00-\$22.50 (two pumps)

Series F—High volume bronze rotary gear pumps

Oilless bearings 50-150 G.P.M.—0-150 P.S.I. \$77.50-\$200.00 (five pumps)

Series IV—Rubber impeller bronze pumps

Oilless bearings 6-21 G.P.M.—0-30 P.S.I. \$16.00-\$28.00 (three pumps)

Series 55—Standard bronze rotary gear pumps

Grease fittings 2-23 G.P.M.—0-100 P.S.I. \$11.25-\$29.00 (twelve pumps)

Series G—Standard bronze centrifugal pumps

Grease fittings 2-25 G.P.M.—2-10 P.S.I. \$9.25-\$24.00 (three pumps)

See our catalog in Sweet's PRODUCT DESIGN File

OBERDORFER BRONZE PUMPS

Industrial Pump Div., Oberdorfer Foundries, Inc.
637 Thompson Rd., Syracuse, N. Y.
Address the 1953 edition of the Oberdorfer Industrial Pump catalog to:

NAME _____

COMPANY _____

ADDRESS _____

Do you want a factory representative to call ☐ Yes ☐ No

When inquiring check CP 2370 on handy form, pgs. 2-3

When inquiring check CP 2368 on handy form, pgs. 2-3

MATERIAL HANDLING

In or out, left or right, conveyor traffic is directed at will of switch operator . . .

air-operated roller line section has pushbutton control for diverting packages

Uses: For diverting packages or drums from conveying lines. (Six switch sections deliver packaged materials from a single line source of supply into as many as six different receiving lines.)



Photo shows operator switching conveyor section to divert packages as desired. In insert, the system is shown as 1) incoming line, 2) is the switch section that can be positioned with any of the three outgoing lines indicated 3), 4) and 5)

Governing condition is usually that the number of lines receiving the packages will depend on the length of the unit and the amount of floor space which can be devoted to it.

Features: Pushbutton-controlled unit can be conveniently located to direct the flow of one or more packages as determined by the operator, thus it is possible to achieve savings in time as well as space and effort.

Description: Units of the switch section have been built in sizes up to 42" wide. Control mechanism is normally actuated by air cylinders. Unit is available in various sizes and styles to meet special requirements.

(Development of the Alvey Conveyor Mfg. Co., Dept. CP, 9308 Olive Street Road, St. Louis 24, Mo. . . or for more information check CP 2371 on convenient Reader Service slip between pages two and three.)

Statistical Quality Control?

Nomograph on pages 168 and 170

finds standard deviation quickly.



IN BINS

**or
BOXCARS**

PAYLOADERS

Blast Bulk Handling Costs

Scoop-up? Carry? Dump? Spread? Load? Pile? Pour? . . . "PAYLOADER" tractor-shovels will do all of these bulk material handling jobs for you and many more . . . up to three tons at a time . . . travel at speeds up to 28 miles per hour . . . work inside buildings or outside on pavement or ground.

"PAYLOADERS" bring a combination of speed, low cost, flexibility and versatility to your bulk-handling problems unmatched by any other type of equipment. Thousands of "PAYLOADER" installations in all kinds of plants and situations have accomplished tremendous

cost reductions through savings in time and labor and through increased production.

Our broad experience, plus that of your Hough Distributor, is available to help solve your bulk material handling problems, and without obligation. The Frank G. Hough Co., 744 Sunny-side Ave., Libertyville, Ill.

FREE HANDBOOK

Tells how and where to look for signs of inefficient bulk materials handling . . . how to analyze, organize and set up an efficient handling system. Plus many useful tables and data. Write for "Bulk Materials Handbook."



PAYLOADER®

When inquiring check CP 2372 on handy form, pgs. 2-3



Loading prefab metal sections at Bargar Metal Fabricating Company, Cleveland.

**TOWMOTORS
IN ACTION
IN U. S.
INDUSTRY**

Low-Down on the Load-Up

It used to take three men five hours to load one trailer. Now, three men and a TOWMOTOR load FIVE in the time it took for one!

TOWMOTOR has *everything*—TowmoTorque, the new drive that saves shifting time and energy! Creep-Control, so you can ease in and up with loads simultaneously! Exclusive TOWMOTOR Power Steering, to save wear and tear! New "Cushioned Power" Diesels for greater power and economy! When you consider original investment plus cost of operation and maintenance, TOWMOTOR handles more tons per dollar. Write today for book on TowmoTorque and Power Steering. TOWMOTOR CORPORATION, Div. 2307, 1226 E. 152nd Street, Cleveland 10, Ohio.

TOWMOTOR
THE ONE-MAN-GANG

FORK LIFT TRUCKS and TRACTORS
SINCE 1919

TOWMOTOR ENGINEERED FOR QUALITY PERFORMANCE

When inquiring check CP 2373 on handy form, pgs. 2-3

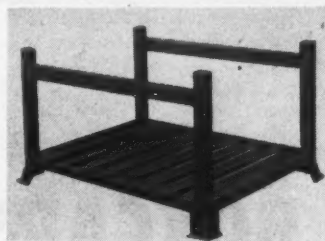
MATERIAL HANDLING

**Stack, storing, skid use
are all possible
with one unit**

Uses: For stacking, storing, transporting pipe, angle iron, structural steel and other long items.

Features: Skid units can be used in combination for storing and stacking as well as for transporting material.

Description: Of all-welded steel construction, the Phil-Tier GC-50 has a heavy-gage corru-



Specially designed for handling long items

gated deck, with four stakes permanently welded in position at each corner. Extra rigidity is assured by a steel cross piece joining the stakes of each side. Capacity is 4000 lb; tiering capacity is 16,000 lb.

Overall height is 30", but deck, width and length can be produced to meet customers requirements. Construction of the legs assures stable stacking and prevents spreading of uprights on the lower unit.

(Development of Phillips Mine & Mill Supply Co., Dept. CP, 2300 Jane St., Pittsburgh 3, Pa. . . . or for more information check CP 2374 on handy form, pages 2 and 3.)

Unit provides continuous weighing of coal

Meter weighing unit, which can be mounted in existing conveyor system, and which accurately totals weight of coal transported by system is discussed in a one-page file sheet.

File 550.21 is issued by Builders-Providence, Inc., Dept. CP, 345 Harris Ave., Providence 1, R. I. When inquiring specify CP 2375 on handy form, pages 2 and 3.



LET Air MOVE YOUR CHEMICAL MOUNTAINS

VACU-VEYOR will reduce your bulk handling costs. It is a completely enclosed, portable, pneumatic system for conveying up to 40,000 pounds of material per hour.

Only one man is needed to direct the pick-up nozzle—the rest is fully automatic. Handles any dry, bulk material in powder, pellet, granular or crystalline form. Vacu-Veyor provides a simple, low-cost method of unloading trucks, ships or railroad cars. It will convey material as far as 350 feet—goes around corners or other obstacles—and is particularly useful for reaching into inaccessible spaces.

VACU-VEYOR pneumatic conveyors can be designed to handle practically any capacity, with portable or fixed installations as required.

For further information, write today to Dept. J-1309-1.

VACU-BLAST CO. INC.
BELMONT • CALIFORNIA

When inquiring check CP 2376 on handy form, pgs. 2-3

Pipe it...
— AND AVOID TODAY'S
HIGH COST OF MATERIAL HANDLING

Screw-Lift is a tubular conveyor that can be installed to convey any free-flowing bulk material from truck or track hopper to processing or to storage — then back to processing or other movement.

The term "conveyor" doesn't fully describe the functions of Screw-Lift — for Screw-Lift is "equipment" that can form a definite part of your processing machinery — recycling materials (such as starch in a candy mogul) or flours to and from mixing vats, to storage for packaging, etc. It is a precision-built conveyor furnished in specific lengths, each running in patented bearings and always in perfect alignment. Patented features prevent distortion or whip. Materials never suffer degradation or exposure. Intakes and discharge are arranged to suit conditions. Feed can be any length . . . height wherever you want to go within practical limits. (We've gone beyond 95 feet). No manual attention necessary — costs are licked from the start.

Screw-Lift

A COMPLETE CO-ORDINATED
CONVEYING AND RECLAIMING
SYSTEM IN A TUBE

Learn how Screw-Lift has simplified the movement of bulk materials in hundreds of plants. Capacities up to 3000 cu. ft. per hour.

Write for Form M-500-2

Screw Conveyor Corporation
600 HOLLAND ST.
PITTSBURGH, PA. 15204
PRODUCTS

When inquiring check CP 2377 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Heavy-duty handling of coiled wire is no burden for lift truck riding on rails

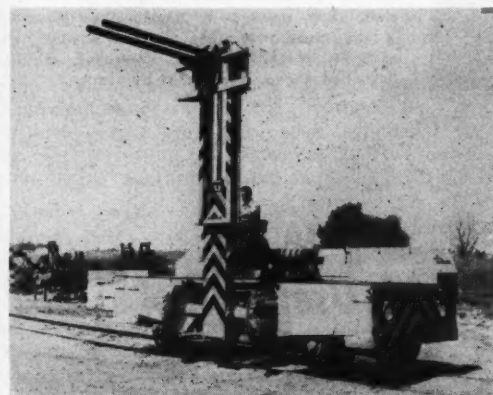
At the Pittsburgh Screw and Bolt Corporation's Pittsburgh plant, the firm faced the problem of moving 3000-lb coils of wire from a supply station to the production lines, lifting and loading them onto a battery of approximately 39 bolt heading machines. Various combinations of man and machine equipment were considered for the job, but none were efficient.

A standard Traveloader was adapted for rail operation, with some specialized handling gear added. Normally sold as a rubber-tired side loader with an oscillating front axle, the unit was fitted with rail-travel wheels and rigid axles for added stability. The control cab was moved from its usual "island" position at the forward end of the chassis to directly behind the loading mast.

Special forks were installed on the masthead for spool handling. Stabilizer jacks were eliminated by rigid design of the axles.

In operation the Traveloader shuttles along 750 feet of track between the reel stock storage area and the 39 machines. At the pickup station, the mast slides out, engages a spool and retracts. At the machine loading station, the spool is deposited on a vertical pivot designed for unreeling wire. Loading and unloading takes approximately 20 seconds at each end.

Capacity of the "rail" Traveloader is 6000 lb; maximum speed is 30 mph, and maximum lifting height is 18'. Unit is powered by 114 hp gas



Loading and unloading 3000-lb coils of wire now takes approximately 20 seconds

engine, has two speeds forward and reverse. Designed normally for lifting, loading, traveling, and stacking applications in industry, the conventional Traveloader (capacity 10,000 lb) eliminates turning, backing, and filling by utilizing the straight-line principle of pickup and delivery.

(Traveloader used for handling wire coils is a product of Dept. KP, Baker-Lull Mfg. Co., Dept. CP, 314 W. 90th St., Minneapolis 20, Minn. . . . check CP 2378 on form, pages 2 and 3.)

Planning a fertilizer plant?

LINK-BELT offers a 6-point "turn-key" service--a unified responsibility for complete plants



1

MODERN LABORATORIES

have both miniature and full-scale facilities—offer free testing service on a few pounds or full carloads of your material. Link-Belt will also lease equipment for work in your plant.

2

PILOT PLANT

and testing station, operated in cooperation with a leading university, continually works to find new ways to improve commercial fertilizer... adapt laboratory procedures to plant conditions.

3

ENGINEERING

based on broad, practical experience, assures better equipment that often permits use of lower cost ingredients. Other developments have reduced processing time, saved storage space.

4

LINK-BELT EQUIPMENT

This includes dryers, coolers, granulating drums, disintegrators, continuous mixers, ammoniators, roll crushers, all types of conveyors and elevators, vibrating screens and a complete line of chains and power transmission machinery.

5

SKILLED ERECTION CREWS

can be furnished by Link-Belt. Link-Belt experience includes dry-mix, superphosphate, nitrophosphate, ammonium nitrate, ammonium sulphate, urea, granulation and other plants.

6

SATISFACTORY PERFORMANCE

When you rely on Link-Belt as a single source, Link-Belt accepts responsibility for placing your plant in full operating readiness. We will also supervise modernizing existing plants.

Ammonium nitrate plant, shown here before completion of building, reveals the variety of Link-Belt equipment used in conveying, drying, cooling, mixing, elevating and screening. This large southern chemical company obtained a fully integrated system. And, because Link-Belt makes a broad line of such equipment—they got the specific unit best-suited to the exact requirements of their particular process.

To find out how this unique "turn-key" service can serve you, get in touch with the Link-Belt office near you. Our engineers will work directly with you or your consultants . . . help you produce better fertilizer at lower cost.

LINK-BELT
CONVEYING AND PROCESSING EQUIPMENT

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle; Scarborough, Toronto and Elmira, Ont. (Canada); Springs (South Africa); Sydney (Australia). Sales Offices in Principal Cities.

When inquiring check CP 2379 on handy form, pgs. 2-3

PLANT... PRODUCT... PROCESS

analyzed-controlled
by Librascope...



Whatever the function, Librascope simplified Computers and Controls are introducing new efficiency . . . in plant, product and process control of continuous or batch production. Whatever your specific need . . . Librascope, Inc., designers and manufacturers of both Analog and Digital Computers and Controls, can give you functionally designed equipment packaged to give the utmost in reliability and performance.

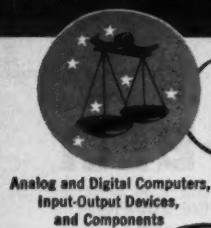
Whatever your problem-solving background in engineering or physics, if you are experienced in computers, instrumentation, circuitry, and/or magnetic devices, you will want to know more about Librascope's plans for the future.

The Simultaneous Equation Solver,

an integral part of Baird Associates, Inc. new spectograph, is a simplified analog computer that resolves the machine's complex data output.



If you desire the challenge of advanced design fields, write to Dick Hastings, Director of Personnel.

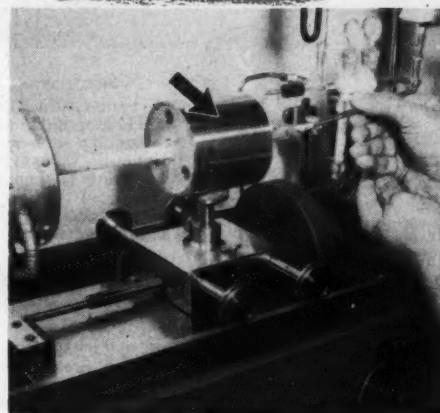
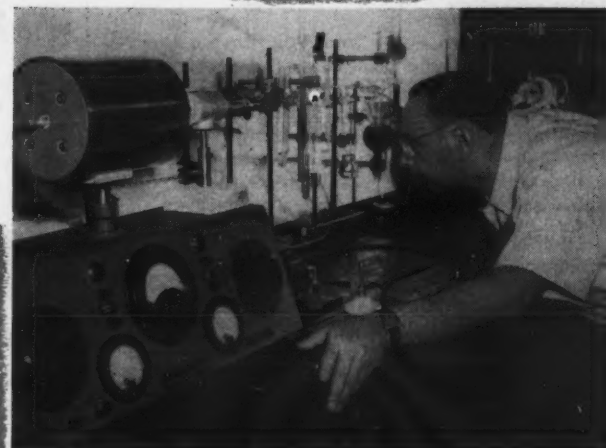


Analog and Digital Computers,
Input-Output Devices,
and Components

1607 FLOWER STREET, GLENDALE 1, CALIFORNIA
A SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION

When inquiring check CP 2380 on handy form, pgs. 2-3

for the
laboratory



Staff member of the microchemical laboratory at Beacon Laboratories checks the rate of flow of nitrogen in a microcombustion train. This apparatus was designed to solve an old problem in chemical analysis — the direct determination of oxygen — and is one of several items of equipment developed by this group

A semi-automatic combustion apparatus virtually eliminates vaporization of samples during analysis. This procedure results in a more reproducible method of micro analysis for carbon and hydrogen. In the photograph, operator is placing a sample in the combustion tube for subsequent analysis. Heater, which is controlled as described above, is indicated by arrow

Microchemical Petroleum Laboratory — A Valuable Asset and Useful Tool

Services performed by laboratory are regarded as a routine analytical tool rather than special method

INCORPORATED into the technical service function of the Beacon Laboratories of The Texas Company as a routine operation is a completely equipped microchemical laboratory which has allowed this organization to improve related functions in a measureable manner. One indication of this is the decrease in reporting of "no analysis due to insufficient sample" from about 3% of the total number of analyses reported to less than 0.1% of the total reports. The

supervisory staff of the laboratory charged with analytical and testing responsibility regards the microchemical service as a representative analytical tool — not as a procedure to be called on only where other methods cannot be applied. In fact, the general opinion of the staff is that certain of the micro methods have definite advantages with respect to accuracy and convenience over various commonly-used macro and semi-micro techniques.

Historical Origin

Originating from the need for a special analytical tool for oil analysis, the group has expanded to a staff of six analysts and a supervisor engaged on selected problems of which approximately 150 analyses per month involve microchemical examinations. In 1935 a sample of oil-sprayed cotton was submitted with the request that the oil be identified as to its original source of supply. This situation posed quite a problem, since after a very careful extraction procedure, approximately 0.1 ml of oil was obtained from the available cotton sample.

In order to accomplish definite identification of the oil's origin, the microchemical analysts at The Texas Company developed a micro-scale method for the determination of viscosity. The reception given the results of this determination and the usefulness of other results obtained by microchemical analysis caused the staff of the laboratory to encourage the expansion of these activities.

Methods Development and Instrumentation

Requests for certain determinations have given impetus to a program of analytical methods development on a micro scale. Included in these developments have been methods for the direct determination of oxygen (the Dundy-Stehr method described below) and the semi-automatic determination of carbon and hydrogen by combustion. Procedures have been formulated for the determination of microviscosity and micro pour points on various samples.

Designed to solve an old problem in chemical analysis — the direct determination of oxygen — the Dundy-Stehr apparatus is a modification of the Schutze-Unterzaucher procedure and overcomes the inherent inaccuracy of the earlier method. The recently developed technique is particularly valuable in the field of technical service where rapid studies are needed of products in service. It replaces the traditional method of obtaining the oxygen content of a given sample by direct determination of other substances present and subtraction to arrive at the estimate of the oxygen present.

Vaporization of sample — a persistent and annoying factor in conventional combustion methods for the determination of carbon and hydrogen — is virtually eliminated in a method designed by analysts at this laboratory. The procedure employs a furnace which incorporates a pressure system to regulate the lateral movement of a heater along the combustion tube. Internal pressure is built-up

(Continued on next page)

NOW

YOU CAN DETERMINE CARBON AND SULFUR CONTENTS
IN A SINGLE OPERATION:

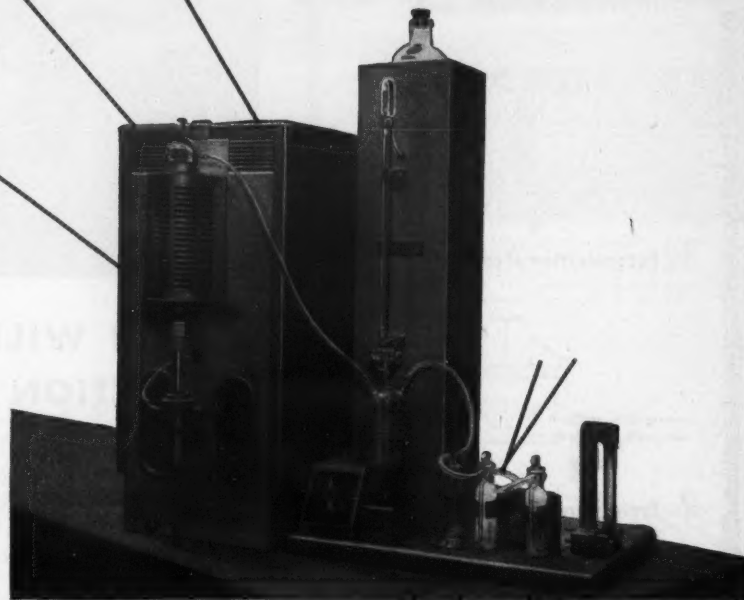
.. running time cut from 35
to 10 minutes

The days of running two separate tests to determine carbon and sulfur contents of iron and steel are over. The Research Laboratories of Lindberg Engineering Company, with the cooperation of A. C. Holler, Twin City Testing & Engineering Laboratory and W. K. Aites of Westinghouse Airbrake Company have developed a new process utilizing a Lindberg high frequency combustion unit to test for *both* carbon and sulfur in a single operation .. and in a total of only 10 minutes!

This represents a time saving of 22 to 25 minutes over conventional methods that require a combined running time of 30 to 35 minutes .. (samples had to be heated in a resistance type furnace for 15 minutes to determine carbon content .. 20 minutes to determine sulfur content).

The Lindberg high frequency combustion unit used in this process is a rough and ready unit, designed and built by the makers of the famous Lindberg heat treating furnaces. It's engineered to heat samples at temperatures up to 3000°F .. substantially higher than previously practical with resistance element furnaces.

If you already have your high frequency equipment, you'll want to adopt this time saving process immediately. If not, check with your nearest Lindberg Laboratory Equipment dealer for details on the Lindberg "HF" unit and this new time saving process.



Here's how the new procedure works:

1. Put 1 gram metallic sample of unknown in ceramic cupellet.
2. Add approximately $\frac{1}{4}$ gram fine mesh tin to accelerate action .. and cover sample lightly with alundum to prevent splatter and minimize generation of iron oxide.
3. Place cupellet on induction unit pedestal, and raise to position in center of work coil, which surrounds a gas-tight "Vycor" glass tube.
4. Introduce controlled flow of oxygen which purges air from entire system and supports combustion.
5. Turn power from standby to plate position which starts inductive heating .. after 3 minutes, unit automatically switches from plate back to standby position.
6. Products of combustion flow to sulfur titration vessel where all SO_2 is absorbed.
7. Next, remaining products of combustion pass to sulphuric acid tower and magnesium perchlorate bulb for drying .. and then to standard type gravimetric determination bulb containing ascarite.

Now, to make the actual measurements:

1. Flush entire system for 3 minutes .. (then remove gravimetric determination bulb).
2. Titrate to get specific color change to show end point.
3. Read solution level (direct reading) to determine percentage of sulfur in sample.
4. Next, weigh absorption bulb to determine change in weight due to addition of CO_2 .

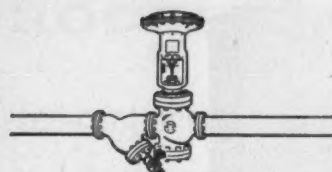
LINDBERG LABORATORY EQUIPMENT DIVISION

Lindberg Engineering Company • 2480 West Hubbard Street • Chicago 12, Illinois

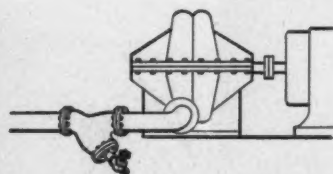
When inquiring check CP 2381 on handy form, pgs. 2-3

Which of over 150^{Leslie} strainers is the one for YOUR job?

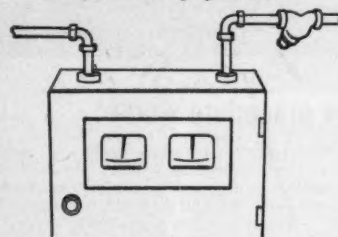
THREE "MUSTS" FOR GOOD PIPING PRACTICE . . .



1. For protection of control valves.



2. Protection of pumps, turbines and process equipment.



3. For superfine cleaning of air, steam and liquid flows, Leslie "Poromet" filters trap particles down to .001".

It costs no more...

to get the right equipment for the right job. In fact, it costs less. It will pay to call your Leslie Engineer before specifying strainers . . . or any pressure, temperature or level control equipment. He's listed in the classified telephone directory in principal cities—under "Valves" or "Regulators."

PRINTED
IN U. S. A.
2499



WHICH WILL GIVE COMPLETE PROTECTION AT LOWEST COST?

Just considering strainer body material and screen specifications alone, there are over 150 standard combinations of "Y" type Leslie strainers. Each is engineered to do specific jobs under specific conditions . . . there's a "Leslie" for any industrial or marine pipeline strainer application.*

Then, with the myriad of pipe sizes and end connections, it's apparent that picking the right strainer to protect valuable equipment exposed to flow is not a "pin-the-tail-on-the-donkey" task.

*There are standard units for pressures to 2500 psi; temperatures to 1050° F; semi-steel, cast bronze, cast steel and cast alloy steel; screwed, flanged, welding or ring-type ends; sizes from 1/8" to 1".

RESERVE YOUR FREE COPY OF 12 PAGE BULLETIN 5308

soon to be released, showing strainer dimensions, pressure drop charts and pressure-temperature limit tables. Reserve your copy today. Write LESLIE CO., 281 Grant Ave., Lyndhurst, N. J.



THE FIRST NAME IN PRESSURE,
TEMPERATURE AND LEVEL CONTROLS
Since 1900

LESLIE CO., 281 Grant Avenue, Lyndhurst, New Jersey

When inquiring check CP 2382 on handy form, pgs. 2-3

FOR THE LABORATORY

(Continued from preceding page)

within the combustion tube by gaseous products of the combustion reaction. This pressure is a direct indication of the rate and efficiency of the reaction. By utilizing this pressure to control the rate of sample heating, these analysts have developed a more reproducible method of analysis.

Scope of Service

The microchemical laboratory at The Beacon Laboratories is used primarily in connection with technical service studies of corrosion; used oils; and deposits, sludges and films of various types. In addition, it is employed in the analysis of specific products for their various constituents as well as in the analysis of these constituents for their various properties and elements.

In this latter case, the constituents which are obtained in the course of analyzing the original sample of a particular product are sometimes not available in sufficient quantity for analysis to be made using "conventional" methods. If micro analytical procedures were not available, the analyst would necessarily be required to obtain a larger sample of the original material and retrace the analysis to obtain enough sample of the constituent for further determinations to be made.

At the present time the laboratory is equipped to determine carbon, hydrogen, sulfur, chlorine, oxygen, phosphorus and nitrogen in various types of materials. Viscosity, pour point, vapor pressure, distillation point, flash point and specific gravity may be determined on a micro scale to further assist in identification of materials. Micro titer, saponification and neutralization values may also be determined to complete the identification.

As utilized in this laboratory, microchemistry not only finds application where conventional techniques cannot be applied, but as a result of its accuracy, it finds frequent and essential use where macro and semi-micro methods would normally be employed. Although it requires special tools, procedures and a measure of special skill, this type of analysis is considered a routine tool and conducted by regular laboratory personnel.

(Information obtained through the courtesy of The Texas Co., 135 E. 42nd St., New York 17, N. Y., and with the cooperation of the technical personnel at Beacon Laboratories of The Texas Co., located at Beacon, N. Y.)

Speeds cleaning and drying of kinematic viscometers in oil testing labs . . .

reduces breakage and frees technicians for more useful laboratory projects

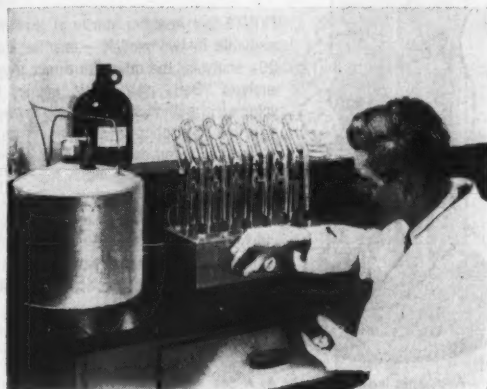
Uses: Cleaning and drying kinematic viscometers.

Features: Two-position knob actuates either solvent-spray action or air blast by either depressing or releasing control.

Description: The Fisher/Tag Viscometer Cleaning and Drying Apparatus first sprays the

FOR THE LABORATORY

pipet with an appropriate solvent and then evaporates all traces of this solvent by means of an air blast. After the pipets are placed over vertical capillary tubes, a simple pushbutton control actu-



Convenient cleaning unit first sprays viscometers with solvent and then spray-dries them with an air blast

ates the necessary solvent or air blast. A pressure-regulator controls spray pressure to within close limits, producing when desired, a "spurt" action effective in flushing out an oil coating the tube's interior.

Cleaning solvent, held in a 5-gal pressure tank, is forced through the capillaries with compressed air from a cylinder or laboratory air-line. Viscometers can be drained of excess oil on any or all of the six draining pins behind the capillary spraying tubes.

(Unit is a product of Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . . check CP 2383 on handy form, pages 2 and 3.)

Precision power supplies designed for counting operations . . .

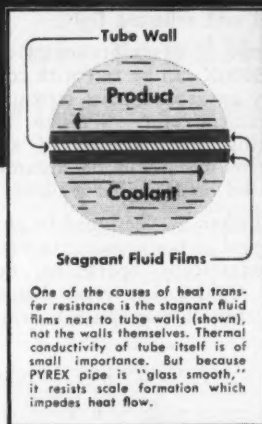
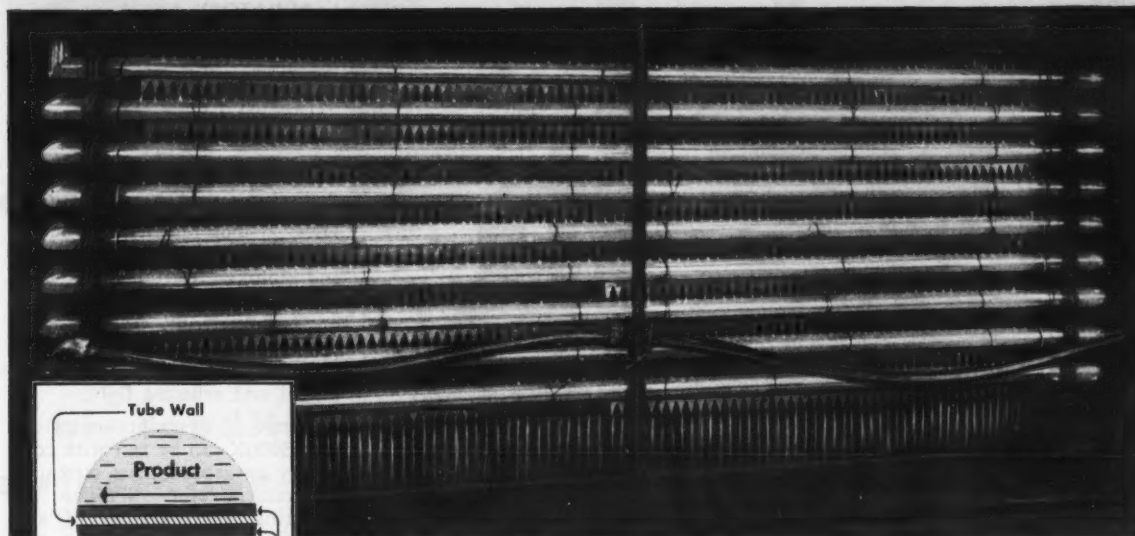
useful in the radioactivity laboratory

Uses: For proportional counting in the radioactivity laboratory and in conjunction with pulse height analyzer systems, mass spectrographs, and other research equipment demanding rigidly precise high voltages.

Features: Variations in voltage over several hours are reported to be less than 0.01% and less than 0.1% per day.

Description: - The Beva Model 300 has an output voltage range from 500 to 1600 v DC; the Model 301 has a range from 1000 to 5100 v DC. Maximum current output for both units is 1 ma. Noise and ripple is less than 0.020 v at 5 kv.

(Available from The Atomic Center for Instruments & Equipment, Inc., Dept. CP, 489 Fifth Ave., New York 17, N. Y. . . . or for more information check CP 2384, pages 2 and 3.)



One of the causes of heat transfer resistance is the stagnant fluid films next to tube walls (shown), not the walls themselves. Thermal conductivity of tube itself is of small importance. But because PYREX pipe is "glass smooth," it resists scale formation which impedes heat flow.

PYREX CASCADE COOLER assembled of 18 standard 10-foot lengths of 2" PYREX heat exchanger pipe, arranged in two banks with standard PYREX U-bends at John Wiley Jones Company plant, Beech Grove, Ind. (Indianapolis). 15% solution of sodium hypochlorite bleach is circulated through the cooler at 35 GPM, under approximately 45 psi.

One Pyrex® cascade cooler saves 8 to 10 hours on every batch

Here's why it will pay you to check your present methods of manufacturing and processing chemicals and pharmaceuticals.

John Wiley Jones Company, manufacturer of "Sunny Sol" household bleach did just that. Now they save 8 to 10 man-hours on every 750-gal. batch of 15% sodium hypochlorite bleach. They did it by replacing previous equipment with one PYREX brand Cascade Cooler.

Because this installation at its Beech Grove, Ind. (Indianapolis) plant has proved so successful, the John Wiley Jones Company plans similar installations of PYREX Cascade Coolers in its other plants.

In this process, chlorine is absorbed into a 76% solution of sodium hydroxide as fast as possible, while the temperature of the solution is held below 85° F. Approximately 500,000 BTU (67,000 BTU per 100 gal.) must be dissipated through the PYREX Cascade Cooler while the 750-gal. batch is being chlorinated to a concentration of 15% sodium hypochlorite. Average time for this processing is about 3½ hours.

In addition to economical heat transfer efficiency PYREX Cascade Coolers offer exceptional resistance to virtually all acids (except hydrofluoric) and mild alkalies. This over-all corrosion resistance protects sensitive products and permits the use of low-cost river or sea water as a coolant.

Through transparent glass, you can watch the flow and easily detect air locks or other impediments. The hard, smooth surfaces clean easily; dust and scale yield quickly to a weak acid poured through the tubes. High physical and thermal strength of the glass itself minimize breakage.

PYREX Cascade Cooler units come completely packaged and can be installed in a day or less. To save space you can mount them on floor, wall or ceiling.

The coupon will bring you a wealth of helpful information on PYREX brand Cascade Coolers, Pipe, Fractionating Columns and other plant equipment. Mail it today.

Corning Glass Works

Dept. CP-7, Corning, New York

Please send me the printed information checked below:

- ☐ "PYREX brand Glass Pipe in the Process Industries" (EA-1)
- ☐ "PYREX brand 'Double-Tough' Glass Pipe and Fittings" (EA-3)
- ☐ "Plant Equipment Glassware for Process Industries" (EB-1)
- ☐ "Installation Manual" for PYREX brand "Double-Tough" Glass Pipe (PE-3)
- ☐ "PYREX Cascade Coolers" (PE-8)

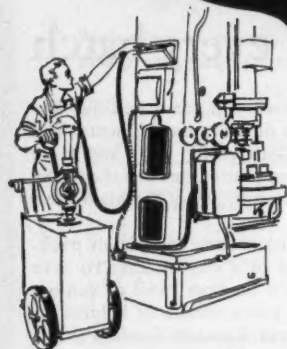
Name.....
Title.....
Company.....
Street.....
City.....
Zone..... State.....

Corning means research in Glass



When inquiring check CP 2385 on handy form, pgs. 2-3

**no. 1
BUY
for handling
INDUSTRIAL LIQUIDS!**



**Here's why
a Tokheim is better!**

- **More Efficient!**
Even at low temperatures — double-action — no wasted motion.
- **More useful!**
Handles many liquids of most any viscosity including oil and water.
- **Safer!**
Eliminates many hazards common to other methods of transfer.
- **Trouble-free!**
Operation not affected by ice, dirt, etc. — easily serviced.

Look inside a Tokheim and you'll see why this amazing double-action pump is tops with so many manufacturers. Its rugged, economical diaphragm construction means low original cost, minimum maintenance. Thousands in daily use giving dependable service-free performance. Eliminates slippery floors. Reduces fire and accident hazards. Delivers up to 20 gallons per minute. Offered with optional parts for handling a wide range of liquids. Available with hose or spout outlets for drum, skid tank or underground installations. Call your dealer or your Tokheim representative. Do it soon!

Write factory for literature

General Products Division
TOKHEIM OIL TANK AND PUMP COMPANY
DESIGNERS AND BUILDERS OF SUPERIOR EQUIPMENT
1690 WABASH AVE. SINCE 1901 FORT WAYNE 1, IND.
Factory Branch: 1309 Howard Street, San Francisco, California

When inquiring check CP 2386 on handy form, pgs. 2-3

LABORATORY

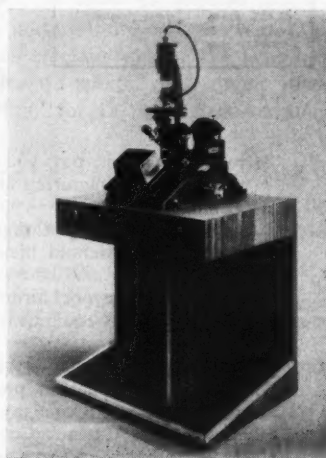
**Speed and versatility
are emphasized in
microscope . . .**

mounting of accessory units
allows quick changes

Uses: For research or routine work in metallurgy, petrography and biology. Instrument provides equipment needed for macro- and microphotography, polarization, phase, dark field, oblique and standard microscopy in transmitted and reflected light.

Features: Magnifications from 4 to 3000X can be run with continuity on ground glass screen of the camera unit. Without re-centering, magnification of any objective set-up can be instantly increased or decreased 4 times.

Description: Designed to permit speed in performance of various microscopy operations, the "ZC" Galileo Universal Microscope will allow eyepiece viewing

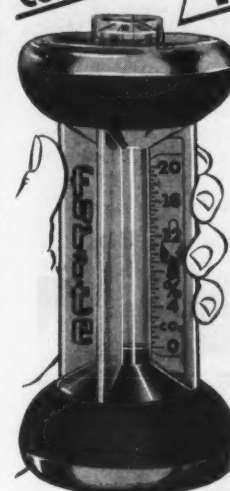


Versatile microscope incorporates many accessories which permit use of unit for wide range of microscopy operations

as well as still and movie camera photography at the same time. A fourth operation, projection up to 20' on a 40" screen, can also be simultaneously performed when transmitted light is used.

As a result of employing a vertical optical path, unit measures 5' high, 25" wide and 31½" deep. Frame carrying the microscope, mirror, and camera is mounted in a laminated hardwood desk of satin finish. Frame is insulated from the desk by a shock-absorbant

CONVENIENT LOW COST ACCURATE



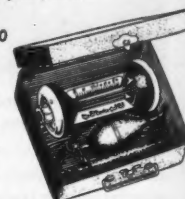
OXYGEN and CO₂ Analysis

FYRITE Gas Analyzer shown at the left is available in two models—one for direct CO₂ analysis, the other for direct oxygen analysis. Both instruments employ the volumetric method of gas analysis involving selective absorption of CO₂ or oxygen by a chemical absorbent. A complete analysis can be made in 40 seconds. Accuracy is within one-half of one per cent CO₂ or oxygen. Absorbing fluids are furnished in individually bottled refills, and replacement of the fluid in the instrument merely requires removing the four screws that hold the cap assembly in place.

Write for
Leaflet I-700

Available Individually or As A Set

FYRITE Gas Analyzers can be supplied individually—in a metal instrument chest complete with rubber aspirator, rubber and metal sampling tubing and filter, as shown at the right; or in a "Duplex Kit" which comprises both CO₂ and Oxygen Analyzers together with one complete gas sampling assembly for connecting either instrument to the desired sampling point.



BACHARACH Industrial Instrument Company

7301 Penn Avenue • Pittsburgh 8, Pa.

When inquiring check CP 2387 on handy form, pgs. 2-3

Factories, Offices, Warehouses Cut Time, Losses — Save Steps



WITH **WHEELER**
SOUND POWERED

Electric TELEPHONES and HANDSETS

- NO BATTERIES. No outside power.
- LOW in FIRST and LAST COST.
- CLEAR SPEECH. CLEAR SIGNAL.
- ALWAYS READY in EMERGENCY.
- No electrical hazard.
- UP TO 12 stations intercom.
- SIMPLE standard WIRING.
- Corrosion-resistant construction.

Write for full information and prices.

ASK ABOUT NEW EXECUTIVE-TYPE CRADLE PHONE.

Built and Guaranteed by

THE **WHEELER INSULATED WIRE CO., INC.**

Division of The Sperry Corporation

1112 EAST AURORA STREET • WATERBURY 20, CONNECTICUT

DW553A

When inquiring check CP 2388 on handy form, pgs. 2-3

CHEMICAL PROCESSING

LABORATORY

mounting to prevent vibration from affecting the unit.

Microscope tube is split into 3 separate trunks, into which the bayonet-mounted accessories are inserted. These elements automatically seat themselves in proper position without further centering. Accessories permit 5 x 7" or 4 x 5" photographs to be taken on plates, roll film or Polaroid film. Built-in exposure meter and a variable power control gives operator full range of lighting and insures correct exposures during use.

(Microscopes are distributed by Opplem Co., Inc., Dept. CP, 352 Fourth Ave., New York 10, N. Y. . . . or for more information check CP 2389 on handy Reader Service slip, pages two and three.)

Calcium oxide has low fluorine content

Available in 1-lb quantities, reagent is offered to meet the need for a practically fluorine-free calcium oxide — 0.00002% fluoride. Product is recommended as a fluorine fixative in the analysis of any material where there is a danger of fluorine loss during storage, drying or ashing.

(Reagent is a product of Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . . or for more information check CP 2390 on handy form, pages 2 and 3.)

Deals with equipment for lab, pilot plant

Two sizes of proportioning pumps, a continuous dialyser for laboratory use and a blender-shaker unit are described in 4-page, illustrated bulletin. Construction specifications, operation information and capacity data are given for each unit.

Bul 16 is issued by Brosites Machine Co., Dept. CP, 50 Church St., New York 7, N. Y. When inquiring specify CP 2391 on handy form, pages 2 and 3.

For more information on product at right, specify CP 2392 . . . see information request blank between pages 2-3.

34

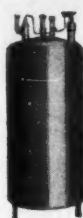
years experience stands behind these products . . . it's all yours when you specify **Acme** air conditioning and refrigeration equipment

Since 1919 Acme has been building units to serve air conditioning and refrigeration fields. During that time they have experimented with thousands of models and installations. On-the-job and in-the-field service has always been the criterion for any design changes Acme makes. Today, Acme has this complete line of commercial refrigeration and air conditioning equipment — the end result of 34 years experience. You gain all this experience for yourself and your customer by the simple act of specifying Acme on your next installation.



FLOW-COLD* Remote Room Conditioner

Designed for the modern recirculated hot or cold water air conditioning systems. Whisper quiet operation with variable air recirculation permits efficient individual zone control.



HI-PEAK* Water Cooler

Seven standard sizes providing large storage capacity and all non-ferrous surfaces in contact with the water.



ACME JCT Cooling Towers

Available for use where compactness counts. An all metal tower completely galvanized for long life. Capacities from 3 to 10 tons.



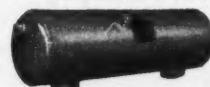
ACME Liquid Receivers

More than 70 standard sizes for Freon, Ammonia, or other refrigerants.



ACME Oil Separators

A complete line of Freon or Ammonia Separators for 1/4 to 100 ton systems.



ACME Heat Exchangers

A complete line of compact, efficient Freon suction and liquid line heat exchangers. Capacities from 3 to 200 tons.



DRY-EX* Water Chiller

More than 700 combinations from which to choose, assuring you of the most efficient chiller operation obtainable. Capacities from 5 to 260 tons.

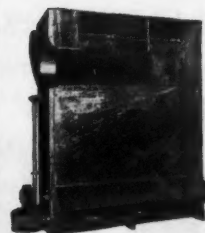
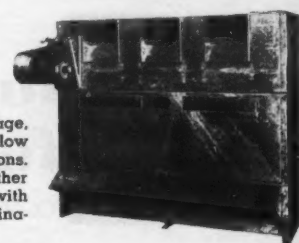


ACME Condensers

More than 120 models and standard sizes of Freon and Ammonia shell and tube and shell and coil types. Capacities from 5 to 700 tons.

BLO-COLD* Industrial Unit Cooler

For vegetable storage, packing plants and low temperature installations. 5 distinct series for either Freon or Ammonia with more than 260 combinations.



ACME Evaporative Condensers

For Freon or Ammonia. More than 30 models from which to choose. Your choice of copper or steel coils. Completely hot-dipped galvanized after fabrication. Capacities from 4 to 130 tons.



ACT Cooling Tower

All metal, hot dipped galvanized induced draft cooling tower. Available with exclusive Acme snug fitting pump for all 16 models. Capacities from 8 to 60 tons.



FLOW-COLD* Packaged Liquid Chiller

A pre-tested liquid chilling unit shipped ready for installation. Matched Acme components for systems of 2 to 15 tons.

Addition of the Acme change over valve results in the Flow-Temp heat pump. A complete heating and cooling system in one compact package.

*Trade Mark

SERVING THE REFRIGERATION AND AIR CONDITIONING INDUSTRY SINCE 1919

*Write for catalogs on any of the products listed.



ACME INDUSTRIES, INC.

JACKSON, MICHIGAN



first

to create and pioneer Steel Laboratory Furniture with:

- Unitized Sectional Construction
- Lock Joint Construction
- Micro Levelling Devices
- Split Reagent Shelf Supports
- Chemical Resistant Enamel
- "Labflex" Patented Construction
- "Pipemaster" Patented Service Racks
- "Labmaster" Design Patented Service Fixtures

Largest producer of Laboratory Furniture with over 50,000 installations—both wood and steel

Write for Catalog

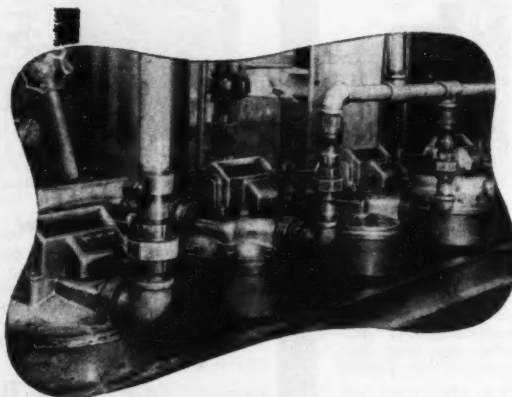
laboratory furniture

COMPANY INC.

Old Country Road, Mineola, N.Y.

When inquiring check CP 2393 on handy form, pgs. 2-3

you
can't beat
the
accuracy
and
dependability
of



XACTO is the meter that's changing liquid-handling habits in every industry where liquid measure and control have been a problem.

XACTO safely handles over 600 different liquids in processing, blending, packaging and many other batching or continuous operations.

Write TODAY for the facts on XACTO!

BOWSER, INC.

1315 Creighton Ave., Fort Wayne 2, Indiana

REGIONAL OFFICES
Atlanta • Cleveland • Dallas • Fort Wayne • Kansas City • New York • San Francisco • Washington, D. C.
Canadian Plant and Sales, Hamilton, Ontario, Canada

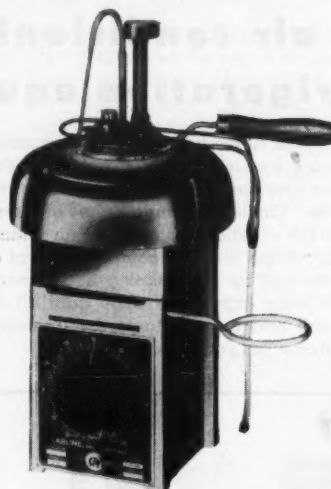
When inquiring check CP 2394 on handy form, pgs. 2-3

LABORATORY

Flash point testers use reflector type heating elements

Uses: For determining flash points of fuel oils according to ASTM D-93. Also, unit is suitable for determinations involving gas oils and soybean oils.

Features: Reflector type heating element affords accurate and easy heating rate.



Compact unit facilitates flash point tests

Description: Incorporating a Speedi-Heat Duplex Heater, the Labline Pensky Martens Tester is assembled with an ASTM Pensky Martens shield, cap and cover in one unit. All details of construction comply with the ASTM D-93 requirements.

Sidearm arrangement holds cover mechanism when cleaning between tests. Heater case is cast aluminum.

(Product of Labline, Inc., Dept. CP, 217 N. Desplaines St., Chicago 6, Ill. . . or for more information check CP 2395 on handy form, pages 2 and 3.)

A company name and address . . .

at end of each editorial article makes it easy to follow-up on ideas you read about in these columns . . . saves you time. Write direct or use the handy Reader Service slip.

THE EDITORS

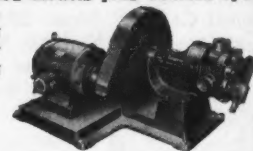
We Have The Answers
TO YOUR
PUMPING PROBLEMS



Every day the Viking sales and engineering staffs answer questions on pumping for a long list of satisfied customers.

Many are companies with problems very similar to yours.

These questions can be answered correctly because Viking people draw from over 40 years' successful pumping experience and recommend from the fastest-growing, most complete line of rotary pumps on the market. Over 600 standard models plus endless special designs. There's no compromise with Viking Pumps. We invite your questions on pumping problems.



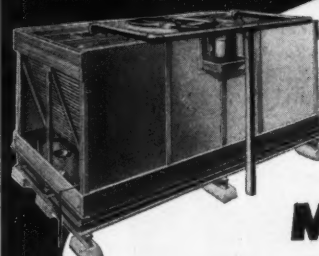
Learn about the complete line of Viking standard and heavy-duty pumps for handling both thin and viscous liquids up to 200 psi. Send for folder 53SCC today.

See Our Catalog in 5 WEEKS!

VIKING PUMP COMPANY
CEDAR FALLS, IOWA

When inquiring check CP 2396 on handy form, pgs. 2-3

The "last word"



... in
intermediate
capacity
cooling

MARLEY
Double-Flow* Aquatowers

- Combines the outstanding features of Marley's large Double-Flow and smaller Aquatowers.
- Low silhouette reduces usual tower height up to 66%.
- Available in 8 standard sizes in steel, or wood with asbestos cement board casing.
- For jobs 50 tons and up.

Write for Bulletin DFAQ-52

*Registered trade mark



The Marley Company
Kansas City, Missouri

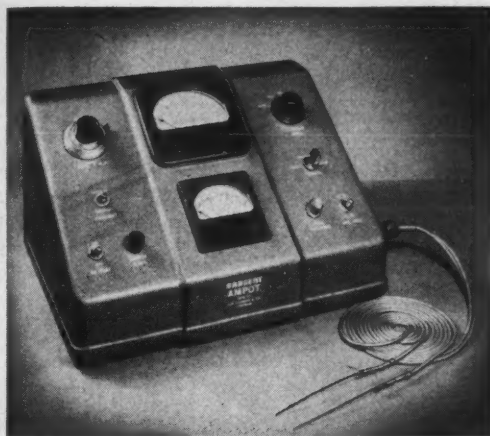
When inquiring check CP 2397 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Portable unit finds application in titrations with dropping mercury electrode

An electrometric titration instrument, the Sargent Ampot, incorporates a polarizing circuit consisting of a 3-v dry cell powered voltage divider network.

The dial reads directly in mv/v span applied to the cell terminals. Current is indicated by a sensitive panel-type microammeter with range multipliers.



Portable unit for electrometric titrations

The unit is portable and vibration insensitive and suited to amperometric titration with the dropping mercury electrode as well as to other common types of metal electrode titrations.

(Unit is manufactured by E. H. Sargent & Co., Dept. CP, 4647 W. Foster Ave., Chicago 30, Ill. . . . check CP 2398 on handy form, pages 2 and 3.)

Hormone research project provides new method of steroid synthesis

A new method of introducing an oxygen atom into the important C-11 position of steroids has resulted from a program of research on hormones. Starting with ergosterol, chemists for a manufacturer of antibiotics and vitamins have prepared an 11-oxygenated steroid suitable for conversion into cortisone and other biologically active compounds of similar structure.

Through the use of liquid sulfur dioxide as a catalytic agent, dehydrogosterol acetate is isomerized to a compound known as a C-ring diene. The light-catalyzed oxidation of this diene prepares it for the important third step in which one oxygen in the oxidized diene is placed in the 11 position characteristic of cortisone. This change is catalyzed by a mild base.

(Details of this preparation together with descriptions of the preparation of intermediates from the 11-oxygenated diene are contained in a report by chemists of the Chas. Pfizer organization as published in a recent technical journal.)



DICALITE'S DIATOM DEPOSITS...

Thousands of Acres of INSURANCE

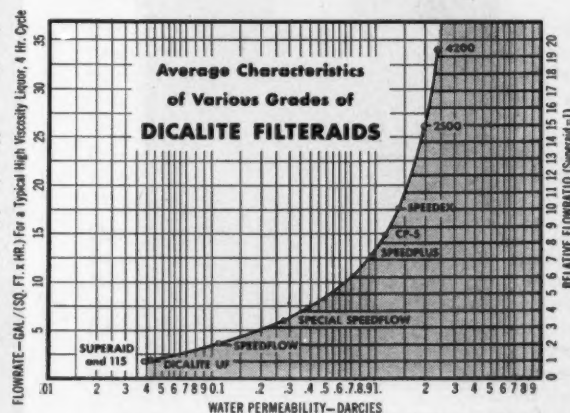


-To Guarantee Constant Quality and Ample Supply in Every Grade

In that one fact — many deposits, with slight natural differences between them — lies the reason why you are assured of both uninterrupted supply and top quality when you use any DICALITE material.

Take, for example, one major group of DICALITE products... the Filteraids. Look at the chart below; notice the wide range of clarity and filtration "speed" available to you for maximum operating flexibility and economy. That's the great advantage given us by

a number of different deposits — a head start to controlled quality through choice of the best crude "ore" for each product. And naturally, DICALITE'S multiple sources of raw material is your assurance of uninterrupted supply.



WHATEVER YOUR NEEDS—YOU'LL DO

BETTER WITH

Dependable
GREAT LAKES

Dicalite
DIATOMACEOUS MATERIALS

DICALITE DIVISION, GREAT LAKES CARBON CORPORATION • NEW YORK 17 • CHICAGO 1 • LOS ANGELES 17

When inquiring check CP 2399 on handy form, pgs. 2-3

**X-ray photometer gives method
for rapid quantitative analysis
of many chemical systems . . .**

unit is reported to cut analysis time to a matter of minutes for most common determinations

Uses: In analysis of various petroleum products — manufacturer states that information is available which shows that use of instrument gives results comparable to ASTM methods with considerable saving in analysis time and cost.

Among the various determinations in this field for which the unit is suitable are: sulfur in crude and refined oils, tetraethyl lead in gasoline and additives in lubricating and special-purpose oils. In addition, the instrument is useful for the analysis of metals in lubricating oil additives.

The X-ray photometer can distinguish one plastic from another among several common materials, as well as measuring quantitatively the chlorine content in a single plastic material.



Compact, convenient photometer permits non-destructive chemical analysis

The concentration of filling and impregnating agents in paper, wood, cloth, and rubber sheet products can be determined with the unit. For example, the titanium content (as TiO_2) of a finished paper can be determined by measuring the X-ray absorption in a stack of sheets of the paper.

The heavy metal content of glass, such as the lead content of leaded glass, is easily measured with the photometer under certain conditions.



Integrated, interlocking Westinghouse equipment, used with all types of arc furnaces, increased elemental phosphorus production in this furnace.

An inter-
furnace
make p
creased
capacity
scribed
chemic
making
have V
makes

Shell-
To me
Westin
transfo
core-fo
stand t
in har
ratings
transfo
and se

Electri
Westin

Westinghouse power package boosts arc furnace production

An integrated power package, applied to your arc furnace installation by Westinghouse engineers, can make production jump. One chemical company increased power efficiency 10% and boosted furnace capacity by using the Westinghouse equipment described below. In fact, a convincing number of chemical manufacturers could show you profit-making proof, because more furnaces today have Westinghouse equipment than all other makes combined.

Shell-form design strengthens transformers—To meet the trend toward higher voltages, Westinghouse offers its outstanding shell-form transformer... far stronger than the conventional core-form construction and more compact. It can stand the overloading and high stresses encountered in handling heavy current surges. Built for all ratings over 1500 kva, Westinghouse shell-form transformers have a fine record for low maintenance and service continuity.

Electrical brain moves electrodes—Another Westinghouse development—Rototrol®—maintains

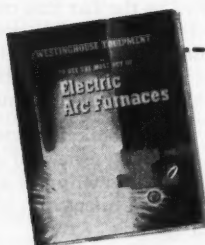
the desired power input. As furnace conditions change, Rototrol automatically and smoothly moves the electrodes up or down within the charge. It balances arc voltage and current to hold steady the input set by the operator. Rototrol acts fast and doesn't overshoot.

Maintenance men like this breaker—Westinghouse has designed two new hard-working air-blast circuit breakers that provide 500,000 kva interrupting capacity. They can withstand 15,000 operations without major maintenance—seven or eight times more than conventional oil-insulated breakers. Inspection and oil reconditioning every two or three weeks are no longer necessary.

Free booklet of arc furnace ideas—An informative, 20-page booklet, *Westinghouse Equipment for Arc Furnaces*, can spark ideas for your operation. Here's convincing evidence... facts, installation photos, technical data... to show that it's wise, when your next project comes up, to call your nearby Westinghouse representative. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

J-94988

YOU CAN BE SURE... IF IT'S
Westinghouse



Westinghouse Electric Corporation
P. O. Box 868
Pittsburgh 30, Pennsylvania

Please send my free copy of B-4695, *Westinghouse Equipment for Arc Furnaces*.

Name _____
Company _____
Street _____
City _____ State _____

When inquiring check CP 2400 on handy form, pgs. 2-3

Features: The redesigned instrument has all controls centralized on one panel and features an air-cooled X-ray source. For use in non-destructive rapid analysis of many common chemical systems, it can be operated with good accuracy by a technician, thus freeing the chemist from routine work.

Description: The General Electric X-ray Photometer is designed to measure the relative X-ray absorption of a sample and a reference. The reference consists of a tapered Lucite disk coupled to a balance control. The instrument consists of the following principal components: 1) an air-cooled X-ray source with associated controls and temperature alarm; 2) calibrated plastic reference attenuation disk for adding known absorption to standard; 3) an aperture which divides the X-ray beam and directs the split beams through sample and reference to permit simultaneous comparison; 4) a two-compartment cell to hold the sample and standard; 5) differential ion chambers converting X-ray energy to an electrical signal; and 6) DC amplifier to provide power for driving balance indicator.

Various determinations require individual calibration curves, but after preparation of this data, individual analyses are quite simple and rapid. Unit is intended for quantitative analysis, since its lack of specificity does not suit it for qualitative determinations.

(X-ray photometer is manufactured by General Electric Co., Dept. CP, One River Rd., Schenectady 5, N. Y. . . . or for more information check CP 2401 on handy form, pages 2 and 3.)

Versatile laboratory mill is less than 2 ft high

Uses: Adapted to laboratory processing and control work. Useful in laboratory development work, since formulation and control work can be done quickly and the product taken directly to a larger mill for volume production.

Features: Unit is less than 2' high — stands 23-1/4" high, is 8-1/4" in diameter and weighs only 41 pounds.

Description: Like all other mills marketed by manufacturer, the Morehouse Midget Laboratory Mill operates on the principle of a Carborundum stone revolving at high speed against a stationary Carborundum stone. Material to be processed is fed between the stones. Double bearing spindle alignment assures positive positioning of the rotor and stator components, and clearance between the processing stones can be varied in 1/1000" stages positively and accurately by a simple hand wheel control. Highly polished processing chamber permits easy cleaning so that several laboratory batches can be run through without danger of contamination. Power is supplied by a 3/4-hp motor operating on 110 volts.

(Manufactured by Morehouse Industries, Dept. CP, 1156 San Fernando Rd., Los Angeles 36, Calif. . . . check CP 2402 on convenient Reader Service slip between pages two and three.)

H.P. pipe gaskets
like these
made to your order
by gasket
specialists...



FLARE TYPE GASKET WITH BELLOWS ACTION



SOLID FLARE TYPE GASKET



PROFILE GASKET



V-TITE GASKET

OVAL OCTAGONAL

...to save you both time and money

When you need metallic gaskets for high pressure piping, put the job up to Johns-Manville Goetze Gasket specialists. You benefit in many ways:

You get the exact gaskets you need for maximum efficiency under *your* operating conditions, tailor-made to fit *your* equipment. You get the savings in cost made possible by intensive specialization and modern production tooling. And you get the full benefit of over sixty years' experience in designing specialized metallic gaskets for industry's most complex sealing requirements.

Typical styles of Johns-Manville Goetze Gaskets that have been made to order for high pressure

piping service are shown above. The flare type gasket with bellows action and the solid flare type are particularly suited for pressures above 5000 psi; the profile and V-Tite gaskets are generally used for lower pressures. Each of these is fabricated to extremely close tolerances. Other styles can be made to any desired cross section to meet your individual requirements.

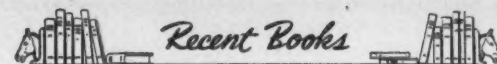
For more information about Johns-Manville Goetze Gaskets, write for your copy of Catalog PK-35A. Or send us your drawing or template for an immediate quotation. Address: Johns-Manville, Box 60, New York 16, N. Y.



Johns-Manville Goetze GASKETS

THERE'S A JOHNS-MANVILLE PACKING
AND GASKET FOR EVERY SERVICE

When inquiring check CP 2403 on handy form, pgs. 2-3



Recent Books

COLLOID SCIENCE

Vol I, Irreversible Systems

Reviewed by Clifford K. Sloan

Chemical Department

E. I. du Pont de Nemours & Co., Inc.

Wilmington 98, Del.

In reverse order of publication, this Vol I on Irreversible Systems has appeared three years after Vol II on Reversible Systems. Whereas Vol II dealt with macromolecular sols, chiefly those of long chain organic polymers, Vol I deals largely with the older inorganic and protein systems wherein the electric double layer phenomenon exercises a more prominent function in determining the properties of the sol. Editor of this 389-page book is H. R. Kruyt, President of the Central Council for Applied Scientific Research in the Netherlands, T.N.O., The Hague.

Chapter headings of Vol I are the same as the first nine headings listed in the preface to Vol II, but the authors have been reduced to three. With the exception of an introductory chapter by Mr. Kruyt and a chapter on optical properties by G. H. Jonker, Vol I is largely the work of J. Th. G. Overbeek, Prof. of Physical Chemistry at Utrecht Univ. Special acknowledgment is made to E. J. W. Verwey and to S. A. Troelstra who were consulted by authors.

Chapter headings are:

- I. General introduction
- II. Phenomenology of lyophobic systems
- III. Optical properties of colloidal systems
- IV. Electrochemistry of the double layer
- V. Electrokinetic phenomena
- VI. The interaction between colloidal particles
- VII. Kinetics of flocculation
- VIII. Stability of hydrophobic colloids and emulsions
- IX. Rheology of lyophobic systems

As indicated by these headings, considerable attention is given to the importance of electrokinetic phenomena in this treatise on irreversible colloids. The difficulties of any attempt to divide colloid science into two domains is illustrated by the fact that certain reviewers of the earlier Vol II on reversible systems felt that insufficient attention was given therein to the importance of electrophoresis in describing macromolecular colloids with an electrolytic nature.

Chapter by G. H. Jonker on the optical properties of colloid solutions is an excellent review of published work on the value of light scattering as a tool for measuring the particle size and orientation of the dispersed phase of colloidal systems.

As intended by the authors, Vol I should provide a stimulus to research in the field with which it deals. The book is not an elementary text descriptive of specific colloid systems, but it deals rigorously with several of the basic principles responsible for the peculiar properties of such systems. As was the case with Vol II, the presentation is well documented, and the printing and indexing are good. It is felt that these collective works should play a role in colloid

science similar to that played a quarter of a century ago by the English translation of Freundlich's "Colloid and Capillary Chemistry."

(To obtain "Colloid Science" remit \$11 direct to Elsevier Press, Inc., Dept. CP, 402 Lovett Blvd., Houston, Texas . . . or check CP 2404, pgs. 2 & 3.)

GLYCEROL

Reviewed by H. A. Tetreault
Market Development Section
Industrial Oils Department
Swift & Company

"Glycerol," a recent addition to the American Chemical Society's series of monographs, more than adequately fills a need of many years standing. It is the first significant text on this important chemical to be published since "Glycerol and the Glycols" by J. W. Lawrie appeared in 1928. While it is true that C. S. Miner and N. N. Dalton, the editors, had many new developments in the field to utilize, the text in general eclipses all previous works.

The sequence of development is natural and logical — progressing, as it does, from economics and history through methods of production, analyses and properties, to derivatives and uses.

Historical chapter is interesting and shows a correlation between the development of civilized areas and glycerol consumption that is thought provoking. Discussion of the methods of production was thought to have been particularly well done, in that the subject matter was covered adequately without recourse to unduly long explanation and illustration.

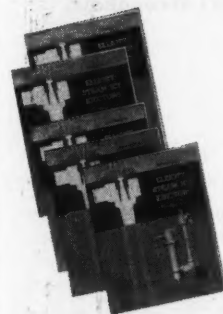
While the chapter on analyses appears to be but a compilation of methods from a number of sources, it does assemble these methods in one text for ready reference. Some methods, for example, the bichromate oxidation, are of dubious value in themselves but may aid in overall evaluation of a crude. Methods available for determining the glycols and glycerol in an admixture need additional study in that they are not sufficiently accurate for some work.

Research done in the past two decades is reflected in chapters on analytical methods and physical properties. Many tables and graphs in the latter appear for the first time in text form. The values indicated in various tables have been compiled and compared in such fashion that they will provide convenient reference for many practical applications.

The discussion on chemical properties and derivatives, while abbreviated, is concise and rather complete. Chapter on uses rounds out the text and complements the earlier discussion about economics. In general, "Glycerol" is an excellent text and reference book for anyone concerned with production or use of glycerol, as well as for the casual researcher who needs specific factual data. Physical form of monograph is typical of the series and will form a valuable addition to any scientific library. There are a few obvious typographical errors.

(To obtain "Glycerol" remit \$12 direct to Reinhold Publishing Corp., Dept. CP, 330 W. 42nd St., New York, N. Y. . . . or check CP 2405, pages 2 and 3.)

Whether it's a little... or a lot...



AT YOUR REQUEST
bulletins covering the entire ejector range. Tell us your requirements.

GET YOUR VACUUM
WITH
ELLIOTT
Steam Jet
EJECTORS

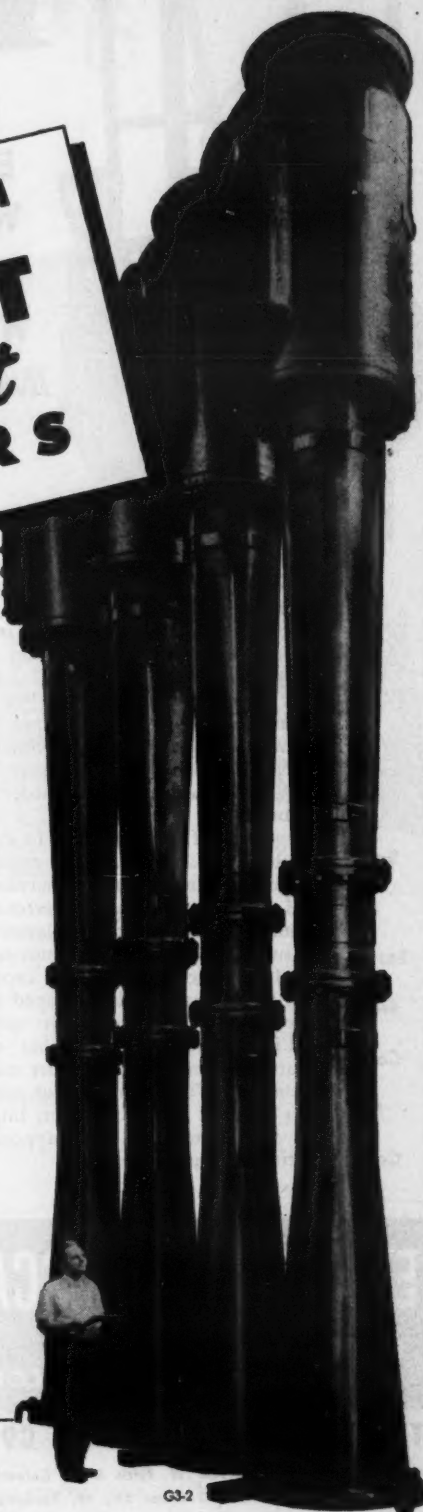
If it's low vacuum, with intermittent service, a small priming ejector, may do the job. If it's extremely high vacuum, constantly maintained, a multi-stage installation of large ejectors, complete with intercondensers, may be called for. In short, Elliott ejectors — and the "know-how" that goes with them — cover the entire range of commercially obtainable vacuum, including such conditions as the handling of highly corrosive vapors.

Elliott Company's position in the field of vacuum equipment and its application has been a development of years. The resultant valuable experience is at your service with no obligation. To apply it, contact your local Elliott representative, or write Elliott Company, Jeannette, Pa.



ELLIOTT Company

INDUSTRIAL PROCESS DIVISION



G3-2

When inquiring check CP 2406 on handy form, pgs. 2-3



THERE IS
NO
SUBSTITUTE
FOR
EXACT
WEIGHT

NEW EXACT WEIGHT Net Weighing Machine...

Here is a NEW moderately priced, automatic weighing machine featuring fine sensitivity and accuracy... *visual indicator* not present in most net weighing units... *fully automatic operation*... *Speed*, with very free-flowing materials ($\frac{1}{2}$ lb to 1 lb quantities), 25 weighments per minute... *Accuracy* down to $\frac{1}{2}$ gram with free flowing materials. *Speed* and accuracy for heavier weighments and products harder to feed determined by product test... *flexibility*, weighments from 1 gram to 10 lbs with model shown... *mobility* is possible if unit is mounted on castors for service from several hoppers... *easy maintenance* due to elimination of unnecessary housings and enclosures. Equipment comprises EXACT WEIGHT Scale of correct capacity, speed and sensitivity. Scale equipped with double photoelectric cell controls and EXACT WEIGHT electrical amplifier unit and a Syntron vibratory type feeder machine complete with Vibra-Flow feeder conveyor with two rates of feed controller, hopper, vibrator with controller and supporting frame.

Sales

&

Service

from

Coast

to

Coast

Write for complete details.

EXACT WEIGHT SCALES

BETTER QUALITY CONTROL
BETTER COST CONTROL

THE EXACT WEIGHT SCALE COMPANY

904 W. Fifth Ave., Columbus 8, Ohio
2920 Bloor St., W, Toronto 18, Canada

When inquiring check CP 2407 on handy form, pgs. 2-3

packaging

Fills Sulfuric Acid Solution at Rate of 40 to 50 Quarts per Minute

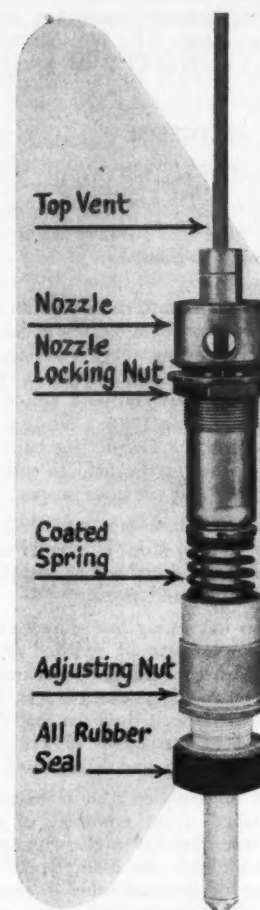
Unit uses all-plastic, sleeve-type,
no-leak valve, plus corrosion-re-
sistant parts throughout

USES: As a filler for 40% sulfuric acid solution, and other acids and corrosive products.

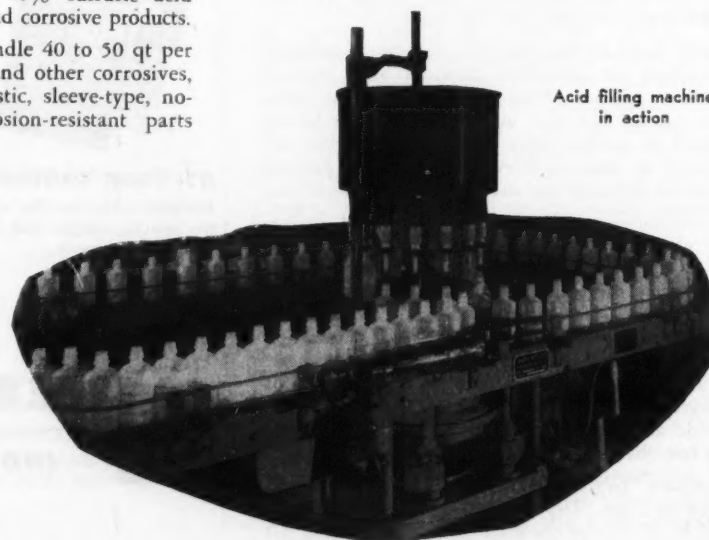
Features: Machine will handle 40 to 50 qt per min of sulfuric acid solution and other corrosives, using $\frac{13}{16}$ " diameter all-plastic, sleeve-type, no-leak valve. Unit has corrosion-resistant parts throughout.

Description: Valve used on this filler is the first all-plastic type ever built, according to manufacturer. The problem was to locate plastics that — would stand up under 40% sulfuric acid solution — were available in bar and tube stock of suitable size — were machinable and would provide bearing surfaces that would not gall, freeze, or wear.

It was finally necessary to construct a valve of many different types of plastic to



Acid filling machine
in action



provide the required characteristics. Several valves were constructed and put through rigorous tests. The valve as shown was subjected to an operating test in 40% sulfuric acid solution for a period of time equivalent to a full year of actual production. The last two days of the test, the filler was speeded up to the equivalent of 30 days' operation in 24 hr. Upon completion of this test, valve was disassembled, thoroughly examined, and all dimensions checked. It is said to have shown no more wear than a stainless steel valve in normal operation on a non-corrosive product.

Operation of valve is the same as company's standard stainless valves. Fill is by simple gravity flow — no vacuum pumps are used. Valves are opened by raising of empty containers against valve seal, which pushes up sleeve exposing liquid port and air vent (therefore, no container, no fill). As liquid flows into container, air is expelled through the vent. Liquid rises until it covers vent, then stops.

Screwing adjustment nut up or down controls distance sleeve is extended into container, thereby regulating filling height (filling is said to be accurate to $\pm 1/64''$). Regardless of how long valve remains in filling position, no overflow will occur. There will be no overflow either because although liquid will rise in vent, it will only reach the level of liquid in the tank.

As filled container is lowered from the valve, spring pushes sleeve down to the tip forming a leakproof seal. Operation is completely automatic. Only supervisory attention is necessary, according to manufacturer.

ACID MACHINE SPECIFICATIONS

Filling Valves 13/16" diam	All plastic specs
Feed Line & Float	Hard rubber specs
Bottle Lifter Assemblies	Fitted with plastic (Micarta) plate & bottle guides of plastic specs
Change Parts	Plastic (Micarta) specs
Tank	Acid resistance coated
Tank Cover	Plastic specs
Feed Screw	Plastic specs
Paint Finish	Acid resistant
Filler Conveyor Rails	Plastic specs
Lifter Assemblies	Fitted with seven lifter assemblies to handle 2 containers per rest for ease of main- tenance & handling

Filling valves are quickly and easily disassembled for thorough cleaning. All parts of machine are readily accessible for cleaning with steam or pressure hose.

(Gravity filler for acids is a product of Horix Mfg. Co., Dept. CP, Corliss Station, Pittsburgh 4, Pa. . . or for more information check CP 2408 on handy form, pages 2 and 3.)

Chase Bag makes

POLYETHYLENE
BAG AND DRUM
LINERS



MULTIWALL
BAGS



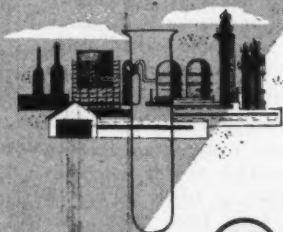
SHARKRAFT
BAGS



PROTEX
WATERPROOF
PAPER LINED
BAGS



for the Chemical Industry



Complete protection of your product
plus attractive appearance
... the result of
over 100 years experience
in designing and making bags.



CHASE BAG COMPANY

GENERAL SALES OFFICES 309 W. JACKSON BOULEVARD
CHICAGO 6, ILLINOIS

30 BRANCHES AND SALES OFFICES STRATEGICALLY LOCATED



When inquiring check CP 2409 on handy form, pgs. 2-3

Reduce Waste and Weight

with MEHL Circular Bottom Polyethylene DRUM LINERS

Now available in all popular drum sizes!

- Eliminate stress and strain on liner and seams
- Are easier to insert
- Eliminate pinch-points and pin-holes
- Material easier to get out of the drum
- Eliminate mandril
- MEHL Liners fit better
- Last longer

WIDE SELECTION OF FLAT LINERS ALSO AVAILABLE

COMPLETE KIT—available at no charge... describes uses and advantages of MEHL Polyethylene Plastic Drum Liners. Write for your copy today.

MEHL MANUFACTURING CO.
2055 Reading Road Cincinnati 2, Ohio

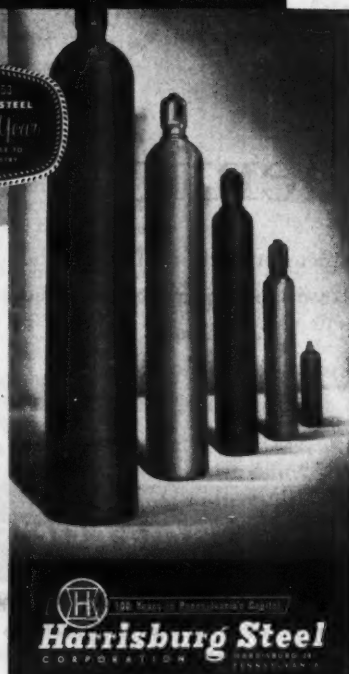
When inquiring check CP 2410 on handy form, pgs. 2-3

HARRISBURG CYLINDERS FOR HIGH-PRESSURE GASES

EXTRA MARGINS OF
SAFETY
AND
QUALITY
IN EVERY CYLINDER

Here are seamless steel cylinders for fixed, liquid, and medical gases... for every chemical processing operation... that are built to a standard, not to a price! Naturally they bear the century-old name of Harrisburg... which means extra margins of safety and quality.

Select the sizes and capacities you need from a complete line (range 14 to 400 cubic feet)... in both domestic and export types... each cylinder manufactured to I.C.C. Specifications, and rigidly tested to Harrisburg Steel's exacting standards. Write for catalog and prices.



Harrisburg Steel
CORPORATION

When inquiring check CP 2411 on handy form, pgs. 2-3

PACKAGING

**Pressures to 500 psi
withstood by filters
for air lines**

Uses: For removing water and oil from compressed air lines.

Features: Heavy duty filters are tested for pressures to 500 psi.

Description: Filters have a steel outer shell 6" in diam and 36" long, and a steel inner cartridge 24" in length by 5" in diam. Inner cartridge has removable perforated bottom disk. Cast bronze head with inlet and outlet openings is bolted to a flange welded to outer shell. Head overlaps flange to provide for additional pressures. Inner cartridge is packed with Fiberglas. This material acts as a baffle and is non-absorbent.

Another unit is in the form of a water-cooled filter. Construction is identical with that of previously described filter, except that a steel jacket 8" in diam has been added to the standard condensing filter which permits a flow of cooling water around the outer shell. Water-cooled filter thus functions as a combined after cooler and filter to provide maximum condensation.

(Products of Air-Line Engineering Co., Dept. CP, 198 Wayne St., Mansfield, Ohio... or for more information check CP 2412 on handy form, pages 2 and 3.)

Hand labeling operation speeded by dispenser

Two-page bulletin describes a labeling dispenser which supplies one moistened gummed label with one stroke of the hand. Device is portable and adaptable to assembly line set-ups. Models are available to handle gummed labels as wide as 6".

Dispenser features an abrasive surface which retards and holds all remaining labels as one is drawn away from stack. According to manufacturer, machine can reach a rate of 2500 items per hr in an assembly line.

Bul on Label Dispenser is issued by Dispense-A-Label Devices, Dept. CP, 201-03 Boggs Ave., Pittsburgh 11, Pa. When inquiring specify CP 2413 on convenient Reader Service slip between pages two and three.



- A truly portable bag closer... weighs only 10 1/2 pounds.
- Lowest priced bag closer on the market.
- Requires no installation... plug into any outlet.
- Handles textile and paper bags.

Thoroughly-proved by thousands of users all over the world to be practical and efficient under varying conditions for constant or occasional use in large or small plants.

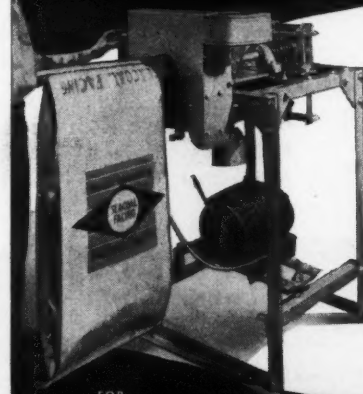
Address inquiries to:

DAVE FISCHBEIN COMPANY, Industrial Sewing Machinery
Dept. 9B, 38 Glenwood Avenue, Minneapolis 3, Minnesota

When inquiring check CP 2414 on handy form, pgs. 2-3

Investigate the 1953 BLACK DIAMOND AUTOMATIC

valve bag packer



Designed to pack dry granular or powdered free-flowing materials

★ Push-button control
Moderately priced
Easy to install
Lowest maintenance costs
Performance guaranteed
★

FOR FURTHER INFORMATION
WRITE **BLACK PRODUCTS COMPANY**
TO 13513 S. CALUMET AVE. • CHICAGO 27, ILL.
MANUFACTURERS SINCE 1912

When inquiring check CP 2415 on handy form, pgs. 2-3

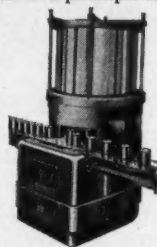


VACUFLOW

POWDER FILLERS

Cut Product Wastage. Vacuflow powder filling equipment operates on a principle of vacuum feeding, instead of pressure, to pack powder into a container.

Air is removed from the container to create a vacuum which draws a measured quantity of powder from the hopper. There is no problem with dust control, since the unique Vacuflow method simply does not involve air currents that cause dust.



Rotary Model

Semi-automatic models are available for filling containers ranging from the tiny talcum box up to and including 100 lb. paper bags and 200 lb. drums. Rotary models are available for automatic production of 5 lb. sizes or less at speed of 45 to 300 per minute.

Pneumatic is the one manufacturer in a position to furnish machines for making up complete production lines. Units are available for air cleaning,

Model E

powder and liquid filling, capping and labeling a wide range of bottles, cans or jars.

PNEUMATIC SCALE CORP., LTD.
67 Newport Ave., Quincy 71, Mass.
Also: New York; Chicago; San Francisco;
Los Angeles; Seattle; Leeds, England



When inquiring check CP 2416
on handy form, pgs. 2-3

PACKAGING

Convenient operation featured on line of scales with shadow indicators . . .

beam and poise on front of unit are easily accessible — dial is in full view

Uses: As a scale within the capacity range from 50 to 1500 grams.

Features: Center tower type scale design has a commodity platter on one side of tower and a counter-weight platter on the other side. Unit is built with beam and poise mounted conveniently on front of scale for easy accessibility. Since beam and indicator dial are in direct line with operator's vision, these features are of particular value in operations which require frequent changing of the poise setting.

Description: This 4200 Series scale has the reflected shadow type of weight indication. Shadow indication is produced by an arm extension on the moving lever system, which intercepts

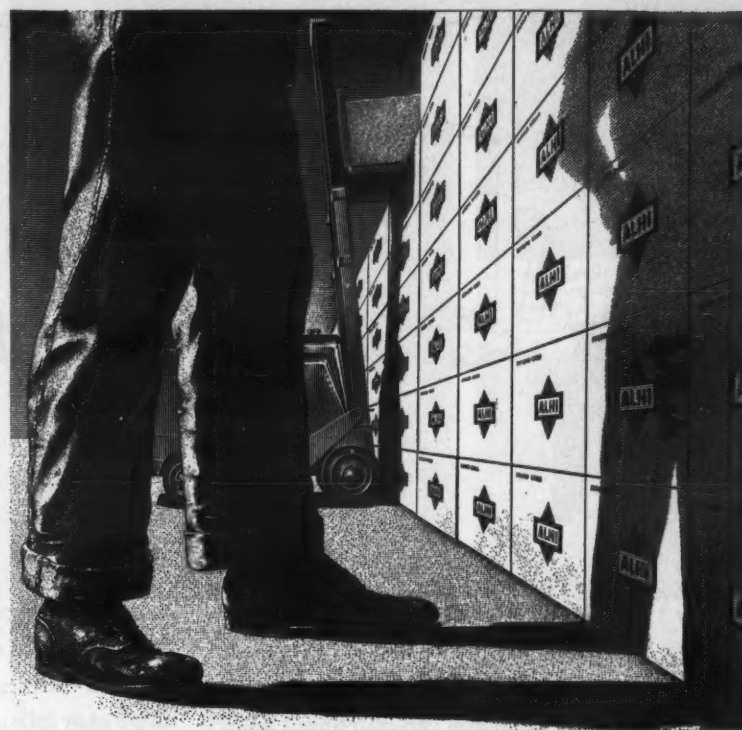


The scale's beam and indicator dial are in direct line with operator's vision

a beam of light emanating from a lamp. This causes a shadow to be cast onto a frosted glass dial, through condensing and projecting lenses and the use of reflecting mirrors. All mechanical indication is eliminated, thereby, frictionless indication is produced. Since the indicator shadow is cast onto a flat glass plate, all possibility of parallax reading is eliminated. Unit weights true on out-of-level surfaces.

Combination of highly polished Brazilian agate bearings and induction-hardened tool steel knife-edges assures extreme sensitivity and long life accuracy. Greater speed is obtained through a reduction of lever movement and by action of an adjustable damping device. Scale series is furnished in a capacity range from 50 gm, with a sensitivity of 10 mg, to 1500 gm with a sensitivity of 350 mg.

(Product of The Exact Weight Scale Co., Dept. CP, 944 Fifth Ave. (West), Columbus 8, Ohio . . . or for more information check CP 2417 on handy form, pages 2 and 3.)



Gaylord Boxes are Easy to Set Up... Hard to Break Down

Solid, straight-standing Gaylord Boxes are designed for fast handling and product protection . . . from packing until final delivery. Your best assurance of tough, resilient, corrugated boxes is Gaylord's careful quality control . . . from the planting of pulp forests, through every step of box manufacture.

For sturdy boxes with easy handling and attractive appearance "built in," contact your nearby Gaylord Sales Office. You'll find it listed under "Boxes (Gaylord)" in the classified section of your phone book.



Their seen and unseen quality gives you an extra margin of safety.

GAYLORD CONTAINER CORPORATION

General Offices: ST. LOUIS • Sales Offices Coast-to-Coast



CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT BAGS AND SACKS • KRAFT PAPER AND SPECIALTIES



Bulk shipments can travel bright and light

IN CONTINENTAL LEVERPAK DRUMS

There's no reason in the world why your bulk shipments shouldn't look as attractive as any other packages in your line. Not when you can purchase Leverpak fibre drums!

As part of Continental's Tailor-Made Package Service, we make these drums in 17 eye-catching colors. We reproduce names and trademarks in any of 14 different inks.

But good looks is only part of the

story. Leverpak drums are capable of carrying up to 40 times their own weight — their resiliency lets them shrug off bumps or falls and handling abuse. They load compactly and ride safely. The patented locking device is easy to open, easy to close. Metal chimes are flash butt welded for greater strength.

Why not ask our nearest sales office what Leverpak and other Continental drums can do for you. We'll be glad to hear from you at your convenience.



CONTINENTAL CAN COMPANY

FIBRE DRUM DIVISION
VAN WERT, OHIO



New York • Philadelphia • Pittsburgh • Tonawanda • Cleveland • Chicago
Atlanta • St. Louis • San Francisco • Los Angeles • Eau Claire

When inquiring check CP 2418 on handy form, pgs. 2-3

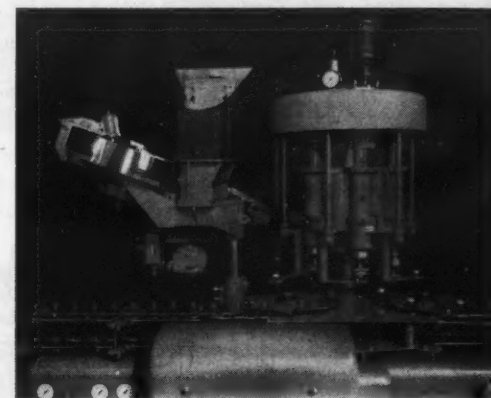
PACKAGING

Up to 200 bottles per minute capped by high speed rotary unit

Uses: As a high speed capper for bottles.

Features: Unit will cap up to 200 bottles per min. It has a selective built-in 4 speed chuck drive, which permits choice of exact speed suited for handling cap range from partial turn lug-type closures to multi-turn long continuous thread closures.

Description: Capping machine is equipped with controlled motion bottle feed, employing helical type intake. Constant speed of container



Capping machine's built-in drive permits choice of exact speed suited for cap

is maintained from intake spider through machine and delivery spider to conveyor again. Result is smooth, continuous, trouble-free operation, according to manufacturer.

Caps are fed in positive manner with no jumbling, marring, or breakage. Chucks are air operated with controlled torque action. Adjustments may be quickly made to meet desired tension upward. Complete safeties eliminate possibility of bottle breakage or damage to machine parts — including no bottle, no cap safety. Each bottle actually selects and receives its own cap.

Both the machine and the conveyor have individual variable speed drives which permit exact synchronization with associated equipment before and after capper in bottling line. Unit may be adapted to individual or synchronized line drive.

(Pneumacap-six is a product of Pneumatic Scale Corp., Ltd., Dept. CP, 68 Neponset Ave., Quincy 71, Mass. . . . check CP 2419, pgs. 2 & 3.)

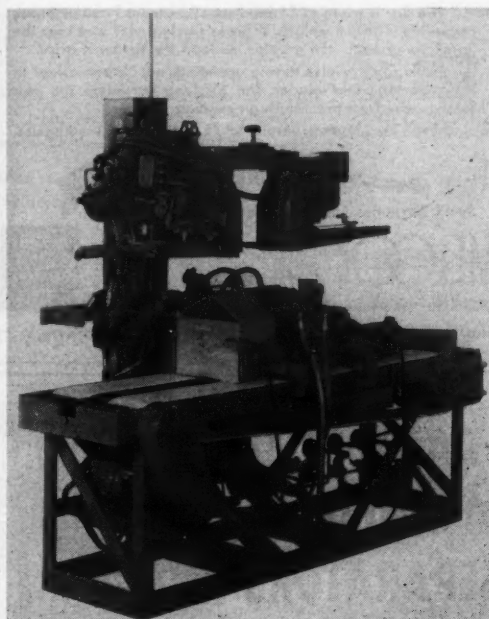
Usable on existing conveyors, carton-stapling machine is fully automatic

Uses: For closing center-slotted corrugated or fibre cartons — of the type used for packaging cans, bottles, and jars.

Features: This carton-stapling machine is 100% automatic, according to manufacturer.

Description: Designed to fit into existing conveyor systems, stapling machine is built to include a conveyor belt that receives filled carton from main conveyor system prior to stapling operation. As carton is conveyed to stapling position, it hits a trip-switch which actuates a device that automatically centers carton at exactly the right spot for proper cross-stitch stapling of top flaps.

While carton is being centered, it continues to move forward on conveyor belt until it actuates a second trip-switch which causes an automatic mechanism to first close the carton's end flaps — then its side flaps. As soon as side flaps are closed, two automatic, re-



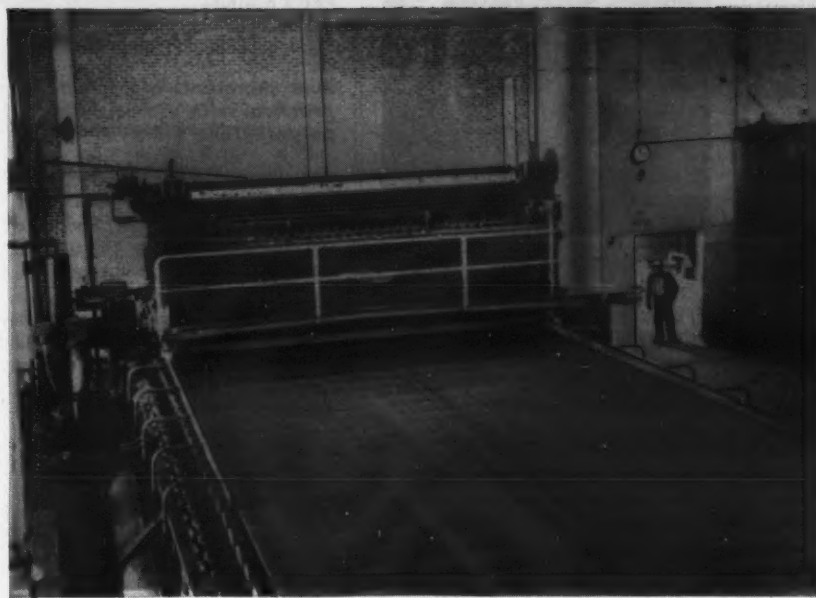
Conveying, centering, and stapling of cartons is one hundred per cent automatic

tractable anvil stapling heads lower to carton top and drive staples at predetermined positions along the center slot.

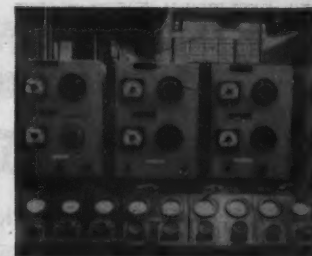
After staples are driven, forward limit switches mounted inside each stapling head are actuated. This causes the anvil to retract into each stapling head — stapling heads to rise from carton top — and automatic centering device to open. Carton then proceeds on stapling machine's conveyor belt to main conveyor system.

This automatic stapling machine is air operated, and will staple from 800 to 1000 cartons per hr. It is adjustable to handle cartons from 5 to 11" high, 8 to 12" wide, and 11 to 17½" long.

(Automatic stapling machine described is a product of International Staple & Machine Company, Dept. CP, 801 Herrin Street, Herrin, Ill. . . or for more information check CP 2420 on handy form, pages two and three.)



Block-long Fourdriniers sitting side by side turn out an endless strip of kraft 24 hours per day, 7 days per week, 365 days per year. At "wet end" above, kraft is 96% water, 4% pulp. Scene is at modern Florida mill where Hudson Multiwall Sacks are made.



Automatic controls safeguard every foot of kraft manufacture, to assure that your exacting specifications are fully met.



At "dry end" of Fourdrinier, water content has been reduced to proper 6%. Crane removes kraft for rewinding, slitting, and humidity-guarded storage.

Here is why HUDSON can guarantee Multiwall Sacks against breaking on your packer

REASON NUMBER 3

HUDSON MAKES ITS OWN KRAFT

Last year this Hudson mill made enough kraft to lay a 20-foot strip several times around the world. Hudson is a veteran of 31 years in kraft manufacture...but its Multiwall Sack mill is virtually new—with outstandingly advanced equipment.

By making its own kraft, Hudson exerts iron-clad control of Multiwall Sack quality and delivery schedules. This is another reason why Hudson guarantees to replace *without cost* all Hudson Multiwall Sacks that fail on your packing or closing machines.



HUDSON MULTIWALL SACKS

the World's most fully GUARANTEED

SEND TODAY: How to store your sacks

for maximum performance
Profusely illustrated folder shows you the scientific way to store your sacks. Step by step procedures that improve the performance of your sacks by up-to-minute storage methods. No obligation.

MAIL THIS COUPON NOW to
Hudson Pulp & Paper Corp., Dept. 217, 505 Park Ave., New York 22, for literature and full information.

NAME _____
COMPANY _____
STREET _____
CITY _____ ZONE _____ STATE _____

HUDSON PULP & PAPER CORP., Dept. 217, 505 Park Avenue, New York 22, N.Y.

When inquiring check CP 2421 on handy form, pgs. 2-3

NOW for the first time!
At low cost

MORE PROFITS!

with



**A LIGHT CAPACITY
OVERHEAD CONVEYOR
FULLY ENCLOSED
CONTINUOUS POWERED**

FEATURES

SIMPLICITY—Engineered to eliminate complicated, fast wearing parts, Chainveyor is revolutionary in simplicity of design. • **TRACK**—1 1/4" x 1/4" slotted steel tube easily installed with minimum support. • **CHAIN**—Full ball bearing wheels mounted on steel side links, heat-treated for long life. • **CURVES**—15" radii provides extreme flexibility. **TAKE-UP**—Adjustable spring take-up automatically maintains uniform chain tension. **VARI-SPEED DRIVE**—Positive sprocket tooth drive with easily replaceable shear pin protection. • **CAPACITY**—30# per pendant at 6" intervals, 60# at 12" intervals when supported by 2 pendants with cross bar attachment.—up to 400# chain pull.

DISTRIBUTORS

Mathews Conveyor Co. Mathews Conveyor Co. West Coast
Ellwood City, Pa. San Carlos, California
Branches in all principal cities
Conveyor Systems, Inc., Chicago, Ill.

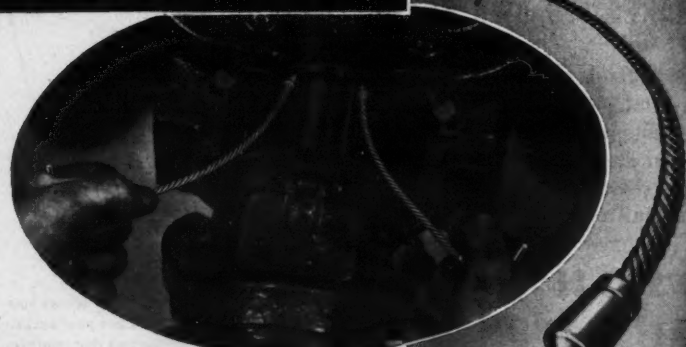
If your conveyor requirement falls within its capacity . . .
INVESTIGATE CHAINVEYOR. It is truly revolutionary in the materials handling field. Write today for full information. Dept. A

UNITED STATES SPRING & BUMPER CO.

4951 Alcoa, Box 2475 Terminal Annex
Los Angeles 58, California

When inquiring check CP 2422 on handy form, pgs. 2-3

SHOP TIP



**For an Easier Way
to Remove Packing**

Here is a rugged hand-tool that "works around corners" for removing old packing from stuffing boxes. The picture shows how a pair of these flexible handled tools operate around obstructions for snagging out those old packing rings. All steel—tempered tool steel corrosion bit.

DURA HOOKS

Ask your jobber—or write for
DURA HOOK Bulletin No. CPDH
covering sizes and prices.

DURAMETALLIC
KALAMAZOO



CORPORATION
MICHIGAN

When inquiring check CP 2423 on handy form, pgs. 2-3

PACKAGING

**Bulk shipments of corrosives
practical with use of molded
polyethylene drums . . .**

55 gallon unit has tare weight
of only 8 lb

Bulk shipments of corrosive and sensitive materials are practical in these one-piece, molded, standardized polyethylene containers, according to manufacturer. A wide range of sizes affords convenience of selection. Simple and rugged construction is said to offer utmost service, with no complicated accessories. Standard dimensions rule out special handling equipment.

Polyethylene drums, including flanges, are molded in one piece, so that they form smooth, continuous seamless units. Sidewall thickness in all units is held to 1/16" minimum with top and bottom sections approximately 1/32" thicker for durable service. Highest molecular weight virgin polyethylene is used, with no adulterants, extenders, plasticizers, or additives. Drums are light in weight, the 55 gal size having a tare weight of only 8 lb.

Closures are rugged and simple. Unit has two heavy-duty flanges with standard thread openings to accommodate both 2" and 3/4" drum plugs which are made of polyethylene. Outer surface of flanges are equipped with bottle cap threads, which take regular metal or phenolic screw caps. These caps afford a secondary seal and protect flanges from outside impact and other abuse.

Due to flexibility of loaded polyethylene container, it has been found desirable to use an outer container. Consequently, the polyethylene unit, in all size ranges, has been carefully tailored to fit into standard steel, fiber, and plywood drums, with the exception of the 5 gal cube container. The latter is contained in a standard corrugated carton. Unit in overpack has been classified a drum by the ICC.

Molded drum is secured to or removed from overpack by the following steps. Holes are provided in the head of the overpack the size of the plastic flange. Flanges protrude through drum head, but not above overpack chime. Standard retaining rings are screwed down, glass threads locking overpack head to plastic flange. To remove plastic drum from overpack, reverse procedure. Result

**ONE MAN LIFTS HEAVY
STEEL DRUMS**

**Easily
and
Safely**



Universal Drum Upending Bar works on lever principle . . . requires only 135 lbs. to raise a 450 lb. drum. An average man now does the work of the strongest man.

The Bar is made of 1" solid steel . . . cannot bend or break regardless of drum weight. It hooks firmly under and over the lip of the drum . . . the greater the load the tighter it grips.

Drum can't revolve during upending, nor "break away" to cause damage and injuries. The 33" long Bar keeps the man safely away from drum during upending.

Write for complete details. \$9.75 each, f. o. b. Los Angeles.

Some Territories Still Available for Distributors

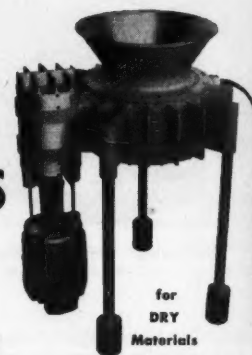
MELOOZ, Inc.

8018 SOUTH MAIN ST., LOS ANGELES 3, CALIFORNIA

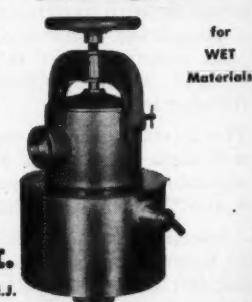
When inquiring check CP 2424 on handy form, pgs. 2-3

MATERIALS
HANDLING
MADE
EASY

**FRANTZ
MAGNETIC
SEPARATORS
can help solve
your IRON
CONTAMINATION
PROBLEMS**



FERRO FILTER



They'll pay off for you in purity and upgrading of your product. Units available (Gravity, Pipeline and Underfeed types) for slurries and other liquid suspensions. Dry type made for separating ferrous particles from powdered and granular materials.

Send for BULLETIN 46

S. G. Frantz Co., Inc.

P. O. Box 1138 — Trenton 6, N.J.

When inquiring check CP 2425 on handy form, pgs. 2-3

CHEMICAL PROCESSING

STRONGER... LONGER LASTING... ECONOMICAL...

"Built in seal"

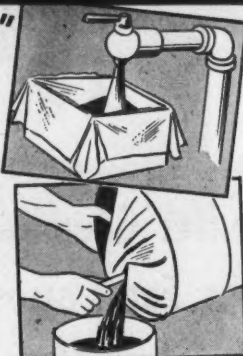
POLYETHYLENE LINERS

To assure greater product protection, "Built-In Seal" Polyethylene Liners incorporate an exclusive welded seal that actually exceeds the sidewalls in strength. The seal is warranted for the life use of the liner.

"Built-In Seal" Polyethylene Liners are chemically inert and non-toxic . . . water, moisture and air resistant . . . unaffected by temperatures from -75° to $+185^{\circ}$ F . . . will not crack, split or run.

Made to your specifications for drums . . . barrels . . . cartons . . . corrugated cases . . . multiwall bags.

Send today for full information, including illustrated catalog.



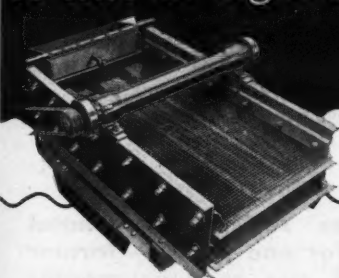
Plastic Packaging Company

730C N. Franklin St.

Chicago 10, Ill.

When inquiring check CP 2426 on handy form, pgs. 2-3

How to get high-capacity, accurate sizing of fine or light materials



Cut operating costs

Get more volume per square foot

YES, "UP" Vibrating Screens' positive action and higher frequency vibration assure greater capacity plus accurate sizing. Get the facts on "UP" and on liquid vibrating screens from your Link-Belt representative, or write for your copy of Book 2377.

LINK-BELT
VIBRATING SCREENS

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices in Principal Cities.



When inquiring check CP 2427 on handy form, pgs. 2-3

PACKAGING

is a drum within a drum, affording the benefits of polyethylene protection with the virtues of the type overpack used. Units are available complete with overpack or may be assembled in the field.

Tests on the drums to date have been very successful, according to manufacturer. Three and six month storage tests show practically no permeation of acids and other compounds. Cold storage tests and drop tests also were passed successfully by the plastic drums, both with and without overpacks.

(Products of Delaware Barrel and Drum Co., Inc., Dept. CP, P.O. Box 1648, Wilmington, Del. . . . or for more information check CP 2428 on handy form, pages 2 & 3.)

Film features history of packaging

Development of packaging from early American days to the present is depicted in a 15-minute color film entitled, "The Story of Packaging."

From the opening sequence showing the Mayflower landing at Plymouth Rock, the film, in colorful animation, carries audience through three centuries of industrial progress. Role played by all types of packaging in the growth of our mass distribution system is portrayed from the original cracker barrel to the streamlined, colorful, and sanitary packaging methods used in industry today.

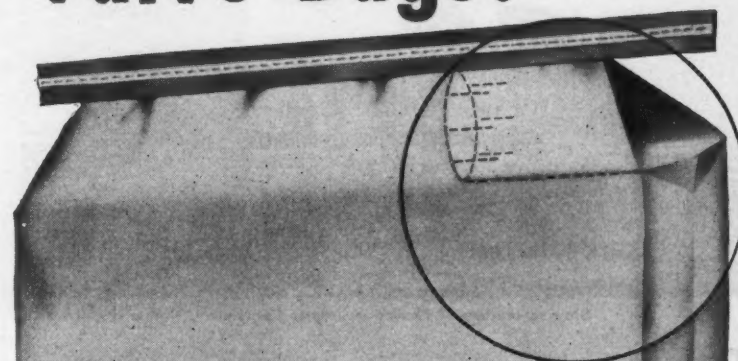
"The Story of Packaging" places the spotlight on mass distribution and shows how various methods of packaging enable purchase of ever-fresh goods in convenient amounts and make possible a vast variety of goods to meet every material need.

Film is presently being shown in sponsoring company's plant cities before employees, and local civic, service, and school groups. A program is currently being worked out for wider distribution following the plant-city distribution.

"Story of Packaging" is sponsored by Continental Can Co., Dept. CP, 100 E. 42nd St., New York 17, N. Y. When inquiring specify CP 2429 on handy form, pages 2 and 3.

The newest, best multiwall bags for valve-packing your fertilizer . . .

Bemis B-FLEX Valve Bags!



You should switch to Bemis B-FLEX promptly because of . . .

1. **LOWER BAG COSTS.** You'll save up to \$4 per thousand compared with conventional inner-sleeve valve bags.
2. **LOWER PRODUCTION COSTS.** Faster handling on your packing machines.
3. **FASTER PACKING.** Are jam-ups a problem? Not with Bemis B-FLEX. No flapping inner-sleeve to slow down material flow.
4. **UNIFORM WEIGHTS.** You can hit your weights "right on the button." Stop over-packing.
5. **CLEAN PACKAGE.** Minimum sifting.
6. **BETTER CUSTOMER SATISFACTION.** No loose, torn sleeves.

And, of course, you get the added benefit of Bemis' crisp, bright, multi-color printing — the finest printing your brand can have on multiwall bags.

Ask your Bemis Man for the complete B-FLEX story.

Bemis



When inquiring check CP 2430 on handy form, pgs. 2-3

The PROTECTION of ALUMINUM



Drawing courtesy of Piasecki Helicopter Corporation, Morton, Pennsylvania

THE H-21 Piasecki Tandem Helicopter—the "Work Horse"—is ideally suited for rescue work in areas inaccessible by other means, and in all kinds of rough weather.

For durable paint adhesion and high corrosion-resistance aluminum parts of the "Work Horse" are Alodized. The "Alodine" protective coating chemical bonds paint, extends paint life, and protects unpainted aluminum.

Because of its economy, effectiveness, and ease of application, the Alodizing process is finding wide-spread use in the aircraft field and in other industries fabricating products of aluminum.

Alodized aluminum meets the requirements of Military Specification MIL-C-5541. Write or call for coating and process data on "Alodine".

"Alodine" Trade Mark Reg. U. S. Pat. Off.



AMERICAN CHEMICAL PAINT COMPANY

General Offices:

AMBLER, PENNSYLVANIA

Detroit, Mich.

Niles, Calif.

Windsor, Ont.

When inquiring check CP 2431 on handy form, pgs. 2-3

*corrosion
control*

Stauffer Chemical Stops Fan Corrosion with Silver Metallizing



Rotor of corrosive gas process fan being metallized with silver

PROBLEM: The Stauffer Chemical Company plant at Niagara Falls, N. Y. operates a chloro-organic acid unit in which a process fan is used to convey very corrosive gases in the operation of a column. This gas is primarily anhydrous hydrogen chloride contaminated with small quantities of chloro-organic acid compounds. Temperature of the gas runs about 20°C.

Original installation was a cast iron exhauster with wheel and shaft made of stainless steel. It operates at 2600 rpm against a head equal to 6" of water and circulates

Corrosive gases resisted by metal sprayed rotor for one year — former coatings lasted one to four months

50 cfm of the corrosive gases. A number of different types of coatings were tried out in an effort to prolong the life of the housing and wheel. Very little success was attained as the best of these coatings lasted only between two and four months on the housing and four to six weeks on the wheel.

Solution: Since test work showed that fine

silver
tion b
metal
The
spray
pose
metal
tough
corros

The r
any p
of usi
rather
ner w
1 show
silver.
(show
When
1952,
perim
shaft
had a
deep
This a

Result
a year
condit
handli
April
standi
work
unit s
three
time v
The a
formin
pany
fied w
work

(Expe
veying
carried
Dept.
N. Y.
from
38-14
CP 24



Fan housing after being silver coated

silver suffered very little from attack or penetration by the gases in use, the decision was made to metallize, with this material as a final coating. The wheel was mechanically cleaned and then sprayed with .005" of molybdenum for the purpose of providing a good bond for subsequent metals. Over this was applied .020" of nickel for toughness, plus a layer of .025" of pure silver for corrosion resistance.

The rather unusual thicknesses were to overcome any possible porosity. This metallizing operation of using three metals to protect still a fourth is rather unusual. The impeller coated in this manner was placed in service in January of 1952. Fig 1 shows this part being given its final coating of silver. In July of the same year, the housing (shown in Fig 2) was given the same treatment. When a second housing was metallized late in 1952, another interesting by-product of these experiments turned up. It was discovered that the shaft packing gland surface, made of a hard metal, had a number of grooves in it, some of them as deep as .092", and all in one month of operation. This area was metallized with tantalum.

Results: When the rotor was inspected nearly a year after it was sprayed, it was still in excellent condition, in spite of the corrosive gases it was handling. When housing was last inspected in April 1953 after nine months of service, it was standing up perfectly. The cost of the metal spray work was about equal to that of a new untreated unit so the application paid for itself in about three months. In addition, inspection and downtime were considerably less.

The area metallized with tantalum was still performing satisfactorily five months later. The company using the metallized equipment is well satisfied with all end results and is planning more work along similar lines in the future.

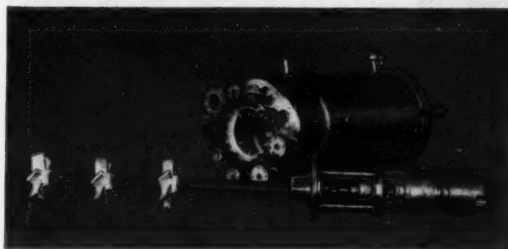
(Experimental work with metallizing the fan conveying corrosive gases at Stauffer Chemical Co. was carried on in collaboration with Metal-Cladding, Inc., Dept. CP, Lake View & Porter Ave., Buffalo 1, N. Y. Information on metallizing may be obtained from Metallizing Engineering Co., Inc., Dept. CP, 38-14 30th St., Long Island City 1, N. Y. . . . check CP 2432, pages 2 and 3.)

Troughed-belt capacities
given on page 172

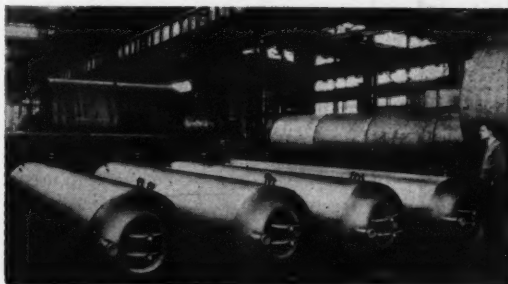
Below: Coal Carbonization Plant Installation



Below: Lead Lined Jacketed Reactor with Agitator



Below: Decarbonizing Cylinders



Write for Free Bulletin
L-52 "Corrosion Resistant Lined Equipment."

• chemical process equipment to your specifications • • •

Typical Treadwell Activity

SYNCHROTRON SHIELDING
PRESSURE VESSELS
OPEN HEARTH LADLES
LEAD LINED TANKS
DAM GATES AND MACHINERY
TOWERS
VULCANIZERS
ROTARY KILNS
ORDNANCE ITEMS

Services

Treadwell features service based on the customer needs. The success of your project is assured by the following.

FIRST—An Engineering department capable of the assistance you may require, whether advisory with your engineers, or the complete origination of designs based on a study of your needs.

SECOND—Complete facilities for precision machining and fabrication, in the hands of trained and experienced craftsmen. Equipment constantly being built to conform to all requirements of existing codes.

THIRD—Installation or erection of your equipment in all parts of the country.

For over 40 years Treadwell has served industry in America and the world. We solicit the opportunity to serve YOU, to lay the benefits of wide experience before you in a round table study and discussion.

TREADWELL

CONSTRUCTION CO.

PITTSBURGH • NEW YORK • CHICAGO
Plant and Main Office: Midland, Penna.



When inquiring check CP 2433 on handy form, pgs. 2-3

ACIDS CAUSTICS SOLVENTS SALTS

PHENOLINE 300 & SILICA FILLER

CONCRETE

AN IMPERMEABLE BARRIER AGAINST CORROSION!

PHENOLINE 300

Protects New Concrete, Resurfaces, Repairs Old Corroded Concrete

Phenoline 300 adheres to any neutral or alkaline surface — concrete, transite, stone—without a primer. Mixed with silica-filler, it trowels in any thickness to a non-slip surface. Applied by brush or spray, it finishes to a smooth, easy-to-clean surface. Powerful bond is unaffected by light traffic, time or temperature.

Highly Resistant to Acids, Solvents, Salts and Caustics at Normal and Elevated Temperatures

Does Not Crack or Spall

Extremely Hard and Wear Resistant

Does Not Soften or Crack Under Heat

Makes Non-Skid Floors

Bulletin A-59 gives you the details on how you can corrosion-proof your concrete. Write for it today.

PI

CARBOLINE

CARBOLINE COMPANY

329 Thornton Avenue St. Louis 19, Mo.

Specialists in Corrosion Resisting Synthetic Materials

When inquiring check CP 2434 on handy form, pgs. 2-3

FOR YOUR STAINLESS STEEL FITTINGS AND FASTENERS

IT'S ALLMETAL FOR QUALITY AND DELIVERY

Allmetal's fasteners and fittings are stocked in types 304 and 316. Specials to order. All made right by Allmetal.

ALLMETAL Specialists in Stainless, Produce Stainless Products Exclusively.

WRITE FOR CATALOG U

STAINLESS STEEL FASTENERS

MANUFACTURERS SINCE 1929

ALLMETAL

SCREW PRODUCTS COMPANY, INC.

33 GREENE STREET NEW YORK 13, N. Y.

When inquiring check CP 2435 on handy form, pgs. 2-3

CORROSION

Only 3 ppm of inhibitor renders gasoline non-rusting

Corrosion inhibitor is announced which is said to make aviation grade gasolines non-rusting when only 3 ppm of the product is used, according to ASTM Test D-665.

The material is an oil-soluble organic inhibitor, designed to prevent corrosion and rust formation in pipelines, tankers, and during storage. It was developed for protection against acidic components found in crude oils and has been demonstrated to be effective against rusting caused by the presence of O₂ in finished petroleum product.

Inhibitor has been compounded to have no adverse effects when used in high quality petroleum products. For example, 100/30 octane gasoline inhibited with 14 ppm of material exhibits no change in color, octane number, accelerated gum, precipitated lead, or other gasoline specifications.

(Kontol 77 corrosion inhibitor is product of the Petrolite Corp., Ltd., Tretolite Co. Div., Dept. CP, 5515 Telegraph Rd., Los Angeles 22, Calif. . . . or for more information check CP 2436 on convenient Reader Service slip between pages two and three.)

Ceramic plungers for reciprocating pumps

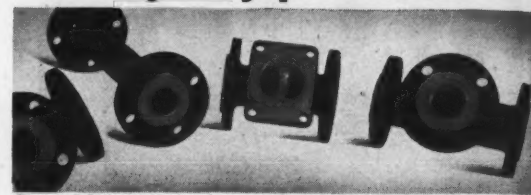
Four-page bulletin lists chemical and physical properties of ceramic plungers for reciprocating pumps, and describes the process by which they are manufactured.

Ceramic plungers are extremely corrosive and abrasive resistant and possess consistent, high-strength properties, according to manufacturer. They are not only available on new pumps, but are also interchangeable with metallic plungers on units now in use.

Bulletin also includes a section on recommended procedures to be followed during installation of ceramic plungers, in order to obtain best operating results.

Bul W-404-B5 is issued by Reciprocating Pump Div., Worthington Corp., Dept. CP, Harrison, N. J. When inquiring specify CP 2437 on convenient Reader Service slip between pages two and three.

"Heavy" coatings deliver heavy duty protection



Pipe and fittings protected against corrosion with Unichrome Plastisol

UNICHROME PLASTISOL COMPOUNDS, providing three properties needed for durable protection of chemical equipment, can profitably supplant rubber for some end uses, and protective maintenance coatings in others.

- (1) They are highly chemical resistant to acids, alkalis, water, salt, oxidizing agents and others.
- (2) They are resilient. Unichrome Plastisols can outclass rubbers on toughness, chemical inertness and economy for many applications. And unlike some protective coatings, they absorb abuse without chipping.
- (3) Thick films can be produced by dipping or spraying. The thicker a protective film, the greater the protection against possible porosity or break-through. These baking compounds build up 3 mils to 3/16" thicknesses with a single prime and single top coat.

For details on a specific Unichrome Plastisol Compound to meet your problem, write, giving details of the problem.



COATINGS FOR METALS

Products of UNITED CHROMIUM, INCORPORATED

100 East 42nd St., New York 17, N. Y. • Detroit 26, Mich. • Waterbury 20, Conn. Chicago 4, Ill. • Los Angeles 13, Calif. • In Canada: United Chromium Limited, Toronto, Ont.

When inquiring check CP 2438 on handy form, pgs. 2-3

Get PLASTITE

CHEMICAL PUTTY

FOR TOUGH SEALING JOBS

Where ordinary putties harden and eventually crumble, **PLASTITE** never loses its plasticity. It grips firmly, yet is easy to remove. Corrosive fumes don't affect it . . . contact with water or acids can't loosen it. Use

PLASTITE for:



- ★ CALKING TOWER PIPE BELLS
- ★ EXPANSION JOINT PACKING
- ★ SEALING PIPE JOINTS
- ★ PATCHING ACID-PROOF MASONRY
- ★ LEAK-PROOFING MANHOLES
- ★ GLAZING PLANT WINDOWS, and many other uses



APPLY PLASTITE EASILY WITH GUN OR TROWEL

Packaged: 1 gallon pails. Price \$7.63
Also available in 5 gallon pails and 55 gallon drums.

SEND ORDERS TO:

U. S. STONEWARE

Plastics - Synthetics Division • Akron 9, Ohio

When inquiring check CP 2439 on handy form, pgs. 2-3

CORROSION CONTROL

Wide temperature range featured by fiber-glass-reinforced plastic pipe . . .

smooth inner wall permits high flow rates — prevents caking

Uses: For use on all standard equipment, and particularly where lightweight, corrosion-resistant pipe is applicable.

Features: Pipe is said to have over a 1000 psi bursting pressure, great tensile, compressive, and flexural strengths, as well as chemical resistant and dielectric properties. Temperature range for continuous duty is between — 90°F and 230°F, according to manufacturer.

Transmission of liquids is said to be particularly efficient because of inner wall smoothness of pipe. This makes high flow rates possible, while preventing wall caking due to attachment of bacterial, mineral, and other deposits.

Description: Pipe is a dense laminate of glass fibers, uniformly distributed through a plastic bonding agent and molded by a process which not only produces a lightweight and corrosion-resistant pipe, but also a pipe with high impact strength which is practically unbreakable under normal conditions, according to manufacturer.

Standard sizes of pipe range from 4 to 1" OD. A full line of fittings makes pipe adaptable to all standard equipment, including valves, pumps, and tanks.

(Product of Refin Co., Dept. CP, Gardena, Calif. . . . or for more information check CP 2440 on handy form, pages 2 and 3.)

Protective coating corrosion engineering service

Plant and field application facilities and typical case histories of complete corrosion service offered by company is described in ten-page bulletin. Included are plant and equipment surveys, equipment design and fabrication, equipment reclamation, and selection and application of protective linings.

One typical example illustrated is a tank truck which is used for alternately hauling calcium carbonate and spent sulfuric acid after being provided with a suitable lining. Another is a black iron kettle lined for a pharmaceutical manufacturer. Its present service life is said to have exceeded that of several other types.

Corrosion-resistant linings for ducts, blowers, heating coils, battery trays, and other pieces of equipment are described. Properties and applications of baked vinyl-type materials, phenolic-baked coatings, and several other types are explained. Chemicals resisted by each are listed.

Bul on corrosion engineering service is issued by A & P Finishing and Mfg. Co., Dept. CP, 17760 Clarann Ave., Melvindale (Detroit), Mich. When inquiring specify CP 2441 on handy form, pages 2 and 3.



taming currents and chlorine

...with **ACE** HARD RUBBER

Looks like a greenhouse, but the 2 acres of "flowerpots" you see here are actually DeNora cells, producing chlorine, caustic and hydrogen at the gigantic new Muscle Shoals plant operated by Monsanto Chemical Company for the Army Chemical Corps.

The covers for these cells posed a tough design problem. They support the heavy graphite electrodes, and must not sag or "creep." They seal in the gases, and must be corrosion resistant. Excellent electrical insulation is needed to prevent expensive current leakages. The covers should be strong and tough, yet light in weight for easy handling. Finally, materials costs must be relatively low, with efficient mass-production techniques.

After considerable study, based on experience with many materials, these covers were designed of solid molded ACE Hard Rubber.

This example is only one of hundreds of ways ACE rubber and plastic products serve and save in the chemical industry. ACE tanks, pumps, piping, valves, fittings, and molded parts are available in standard or special constructions for complete chemical processing, storage or circulating systems. Ask our engineers to recommend the most economical corrosion-resistant equipment for your processes.



ACE rubber and plastic products

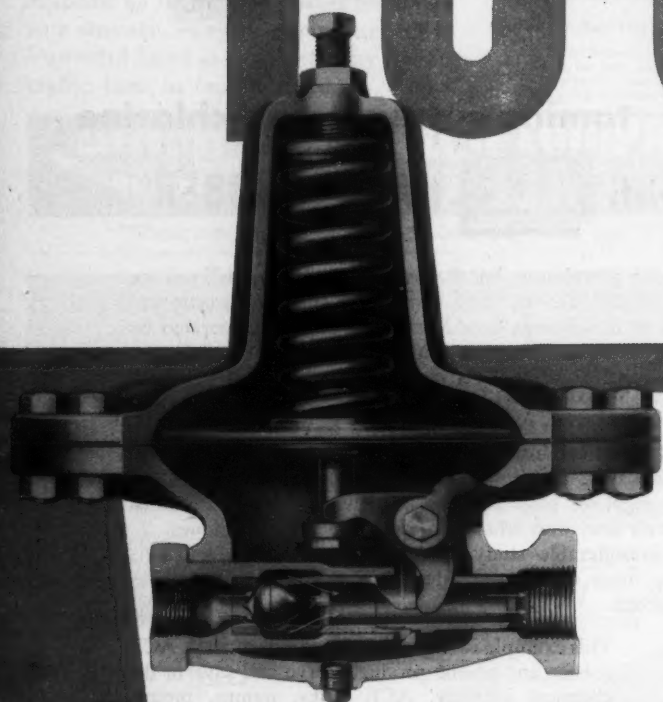
AMERICAN HARD RUBBER COMPANY
93 WORTH STREET • NEW YORK 13, N. Y.

When inquiring check CP 2442 on handy form, pgs. 2-3

TYPE

1000

VALVE



Any product of quality should be dependable when ordinary products fail. Sudden pressure fluctuations, dirt, scale and viscous matter prove "fatal" to ordinary pressure reducing valves.

The CASH STANDARD TYPE 1000 VALVE however, is designed to operate with complete dependability under the

most difficult and unusual circumstances. Many of these units have been in service over 10 years and have never been taken "out of the line."

Truly an EXTRAORDINARY achievement of quality and design excellence.

*** INSTALL CASH STANDARD "TYPE 1000" VALVES**

CASH STANDARD

A. W. CASH COMPANY

DECATUR, ILLINOIS

CORROSION

Chemical fumes, caustic, grease, and moisture resisted by paint

A chemical-resistant gloss white paint for walls and ceilings, formulated on a synthetic rubber base, is reported to resist attack by moisture, grease, chemical fumes, and caustic cleaners.

Recent laboratory tests under which the coating stood up well are as follows:

Oil & grease 24 hr spot test	No effect
Temp of 125°F for 96 hr	No yellowing
Temp of 200°F for 96 hr	Slight yellowing
Immersion in 5% caustic sol for 168 hr	No effect
Ammonia fumes for 120 hr	Slight yellowing
Lactic acid for 120 hr	No effect
Citric acid for 144 hr	No effect
Immersion in water for 94 hr	Small blisters, recovered on drying

Resistance to alkalis and acids, plus fast drying time (average of 2 hr), are said to make paint ideal for use in chemical processing plants and laboratories. Spreading rate for one coat is 550 sq ft per gallon.

(Chemical Resisting Gloss White is product of The Tropical Paint & Oil Co., Dept. CP, 1128-1130 W. 70th St., Cleveland 2, Ohio. . . or for more information check CP 2444 on form, pages 2 and 3.)

Bulletin presents pump for many liquids

Manufacturer's addition to line of units — an end suction, centrifugal pump — is described in 4-page, 2-color bulletin.

Features include double row thrust bearings, deep stuffing boxes, renewable case wearing rings, and others.

Bul WQ-214 is issued by Warren Steam Pump Co., Inc., Dept. CP, Warren, Mass. When inquiring specify CP 2445 on handy form, pages 2 and 3.

For more information on product at left, specify CP 2443 . . . see information request blank between pages 2-3.

Nylon withst paper

Nylon both used in demon wood

The ti cleaning

Low for

recom molten

(Nylon manuf Spring diamet Polym Pa. . . handy

Discu stean

Ma in 4-p har stor iro Als per ber the ma and Art Equ Inc WI pag

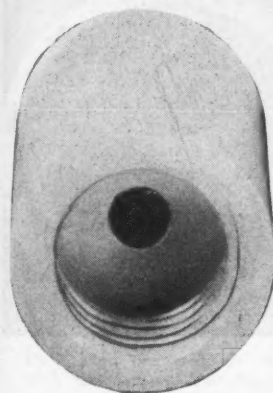
JULY,

Nylon nozzles on pulp cleaner withstand corrosives used in paper processing . . .

demonstrate resistance to caustics and acids

Nylon tips on a pulp cleaner are withstanding both the corrosive and erosive effects of solutions used in the processing of pulp and paper. This demonstrates the resistance of nylon to caustics, wood acids, and dilute sulfuric acid solutions.

The tips serve as under flow nozzles on the pulp cleaning devices. They are machined from 1" diameter nylon rod. All parts of the cleaner assembly are made of interchangeable molded hard rubber with the exception of the nylon nozzle. In operation, the nozzle is constantly immersed in the pulp and paper stock subject to abrasive and corrosive wear. The rate of wear of the nylon tips for this service is reported to be extremely low.



Low rate of wear reported for nylon nozzles on pulp cleaner

Nylon is known to be inert to all alkalis, solvents, organic acids, and dilute mineral acids. It is not

recommended for use in concentrated mineral acids, molten phenol, and formic acid.

(Nylon nozzles are used on pulp cleaning devices manufactured by The Bauer Bros. Co., Dept. CP, Springfield, Ohio. They are machined from 1" diameter Polypenco nylon rod supplied by The Polymer Corp. of Pennsylvania, Dept. CP, Reading, Pa. . . . or for more information check CP 2446 on handy form, pages 2 and 3.)

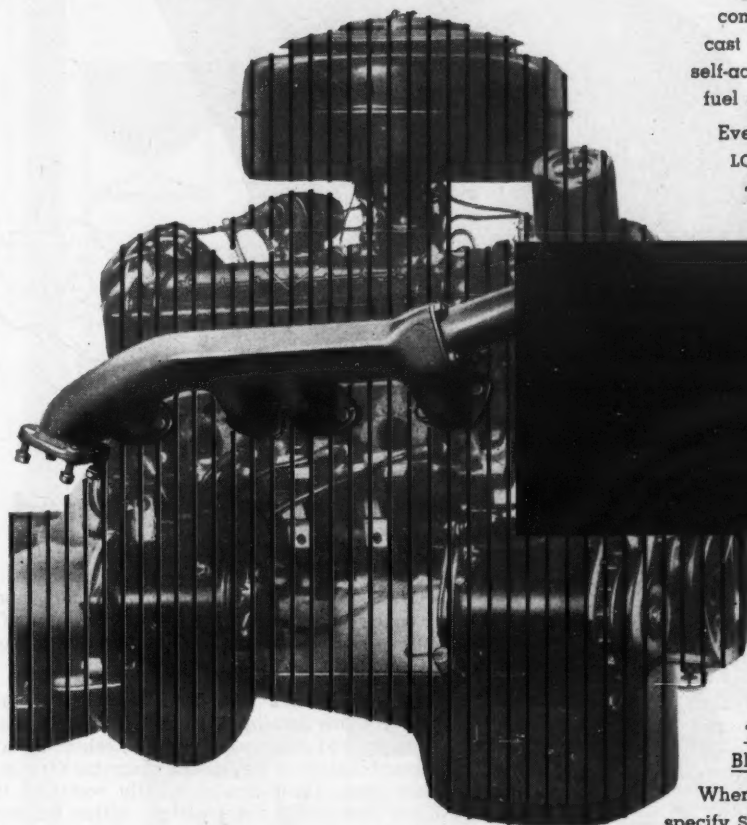
Discusses corrosion problems in steam-jet vacuum equipment

Many different materials used to combat corrosion in steam-operated vacuum ejectors are discussed in 4-page article. It covers these ejector materials: hard rubber, Havg, Karbate, porcelain, Pyrex, stoneware, bronzes, chrome-plated cast iron, Dural, and Hastelloy alloys A, B, C.

Also discussed in the article is company's experience with such materials as titanium, tantalum, beryllium copper, and higher stainless steels in the metal field; Teflon, Synthane and other plastic materials, plastics which use Fiberglas as a filler, and carbon.

Article, "Corrosion Problems in Steam-Jet Vacuum Equipment," is available from Croll-Reynolds Co., Inc., Dept. CP, 17 John St., New York 38, N. Y. When inquiring specify 2447 on handy form, pages 2 and 3.

where Quality counts in a heat resistant finish...



The 1953 Lincoln V-8 engine paces the field in significant features...a new exhaust system, a new type of cam contour, a more compact and simpler carburetor, a precision-cast crankshaft, a full-flow oil filter system, a self-activated ventilating system, and a redesigned fuel system. It's a superb power plant.

Every detail of Lincoln's advanced design LOOKS the part—including the manifold.

The Lincoln exhaust manifold is coated with SICON, which provides lasting quality by preserving the appearance and protecting the surface against unsightly dulling, film deterioration, and corrosion.

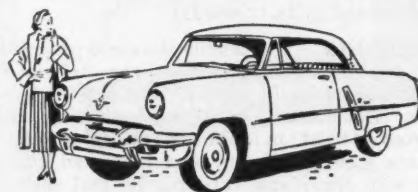
In tests a SICON Black coated manifold was subjected to temperatures of 1000° F. for 24 hours, substantially more severe than would

be encountered under maximum operating temperatures.

To this was added an actual road test of 10,000 miles under all conditions of climate and driving variations.

The results of the tests demonstrated SICON Black 7X933 to be the only finish suitable.

Where quality counts in a heat resistant finish, specify SICON...SICON Black or Aluminum for sure protection against temperatures up to 1000° F. and more...SICON in decorative whites, tans, taupes, gold, for excellent retention of color and gloss in the 400-600° F. range. SICON is easy to apply by brush, spray, or dip, to any chemically clean surface. Write without obligation for details of other SICON applications.



Sicon

Silicone Base Heat Resistant Finish

A Product of
MIDLAND INDUSTRIAL FINISHES CO., Waukegan
America's foremost Manufacturer of Silicone Protective Coatings

ENAMEL • SYNTHETICS • LACQUERS • VARNISHES

MIDLAND Industrial Finishes Company
Waukegan, Illinois Dept. CH-7

Gentlemen: Please send us without obligation, your current literature containing case studies of SICON applications.

Name _____

Title _____

Company _____

Address _____

When inquiring check CP 2448 on handy form, pgs. 2-3

Standardized

PFAUDLER HEAT EXCHANGERS...



for "Custom Engineered Design" at low unit cost

Engineered to your own individual requirements, Pfaudler stainless steel heat exchangers are backed by years of experience in the process industries. Yet, they cost you no more than standard, assembly line units.

THE PFAUDLER FLEXIBLE STANDARD program makes this unusual economy possible. A large inventory of standard heads, tubes and shells allows you to select the most applicable combination of length and diameter for a given heat transfer area. These can be readily equipped with nozzles of any size and in any position—either flanged or threaded. And new production line methods make possible rapid deliveries (4 to 12 weeks).

COMPLETE LINE—The flexible standard program applies to fixed tube sheet, single or multi-pass, tube and/or shell side stainless steel units up to 10" in diameter. In addition, Pfaudler heat exchangers are available with shell diameters from 4" to 24" in four basic types of construction... fixed tube sheet condenser, outside packed floating head design with removable tube bundle and shell, internal floating head with removable tube bundle and shell, "U" tube construction with removable bundle.

**THE PFAUDLER CO., Dept. CP-7
Rochester 3, N. Y.**

Please send me the Pfaudler Heat Exchanger Manual No. 837.

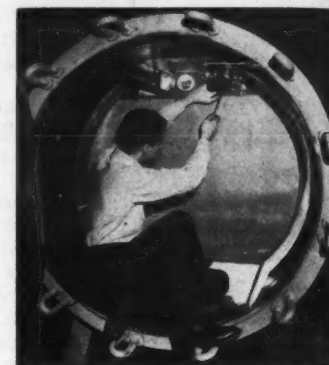
NAME _____
TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____



CORROSION

Dilute H_2SO_4 at 140°F withstood by vinyl plastic in filter

Tests show that a 140°F mixture of manganese sulfate and manganese dioxide in a dilute solution of sulfuric acid used by a battery maker is successfully resisted by vinyl plastic used in the fabrication of a pressure leaf-type filter.



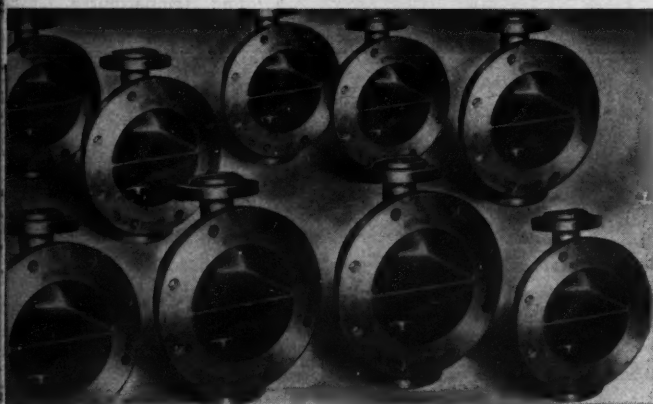
Even the nuts and bolts which connect this pressure leaf filter frame are made from corrosion-resistant rigid vinyl plastic

Filter leaf frames, nuts and bolts holding the leaves together, rollers which hold the leaves in place, the heel plate, and various pipe fittings are made from the rigid plastic. Inside of tank is also lined with a flexible vinyl sheeting to protect it.

Filter consists of a cylindrical tank with the leaves suspended vertically inside. Each filter leaf has a vinyl plastic frame which holds a heavy mesh screen sandwiched between two finer mesh screens. Besides serving as a support for the very flexible fine-mesh screen, the heavy-mesh screen acts as a spacer for draining the liquid into discharge channels formed by placing several leaf units together.

(Unit utilizing the plastic parts is a product of Hercules Filter Corp., Dept. CP, 204 21st St., Paterson, N. J. The Geon vinyl plastic used in the filter was developed by B. F. Goodrich Chemical Co., Dept. CP, 324 Rose Bldg., Cleveland 15, Ohio... check CP 2449 on form, pages 2 and 3.)

For more information on product at left, specify CP 2450... see information request blank between pages 2-3.



SEND FOR THIS PFAUDLER DATA BOOK
—Packed with facts, this 40-page heat exchanger manual has all the data you need to work out capacity and type problems. Easy-to-follow tables, curves and charts. Full details on Pfaudler heat exchangers. Mail the coupon for your copy.

Pfaudler

NACE surveys testing methods of corrosion inhibitors for gas and oil wells . . .

step in development of a standard procedure shows coupon test most prevalent now

Seeing the need for a standard method for evaluating inhibitors for use in gas and oil wells, the National Association of Corrosion Engineers made a survey among producers and manufacturers interested in this field. This survey, which is a step toward development of a standard procedure, showed the coupon weight-loss method to be the one most prevalently used at present. A close correlation was indicated between laboratory tests and field results.

In order to conduct the survey, questionnaires were prepared and mailed to 25 companies, both oil and gas producing companies and inhibitor manufacturers. Eighteen replies were received. Methods reported can be divided into three broad classes as follows:

- 1—Coupon weight-loss method
- 2—Electrical or potential measurement method
- 3—Sessile drop size ratio method

Of the eighteen companies offering replies, three reported no laboratory procedure, three reported methods but offered no details, two reported methods which compare one inhibitor with another in corrosion systems entirely different from those found in oil and gas wells, and ten reported methods in which coupons are subjected to a corrosion system similar to those found in sour crude oil or gas condensate wells.

As an example of accuracy of such a test, following tabulation may be noted. The laboratory tests are calculated on the basis of a typical well producing 30 bbl or condensate and two bbl of water per million cubic feet.

Inhibitor	Per Cent	Lab test	Field Test
		Wt Loss/MMCF	Wt Loss/MMCF
No. 1	.01	0.9 lb	1.0 lb
No. 2	.005	0.5 lb	0.7 lb
No. 3	.03	0.2 lb	0.3 lb

As shown, the correlation between the loss in weight of metal due to corrosion in the test is very close to the actual loss in the field.

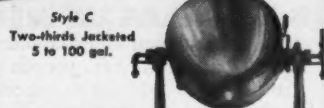
(Technical paper, "Laboratory Method for the Evaluation of Inhibitors for use in Oil and Gas Wells," was prepared by E. C. Greco of United Gas Corp., Dept. CP, Shreveport 92, La. and J. C. Spaulding, of the Sun Oil Co., Dept. CP, Rio Grande National Bldg., Dallas 2, Tex. The paper was presented before the recent National Association of Corrosion Engineers Conference in Chicago.)

No need to search high and wide . . .

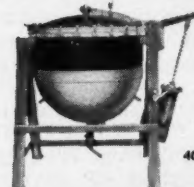
for more information on something you read in these editorial articles. A letter to the company listed at the end of the article . . . or a mark on the Reader Service slip . . . will bring you what you want. This idea originated with CHEMICAL PROCESSING many years ago to help busy men like you!

THE EDITORS

COOKING KETTLES

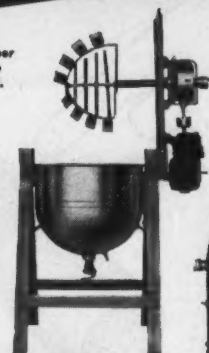


Style CW
Two-thirds Jacketed
80 to 300 gal.



Pressure
Kettle
Two-thirds
Jacketed
40 to 200 gal.

MIXING AND BLENDING UNITS



A3T
Center-line Scraper
Agitator Kettle
25 to 300 gal.

Vacuum Pan
50 to
300 gal.



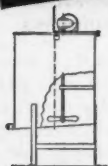
Quick Cooling Pan
50 to 200 gal.

these
LEE Units
WILL REDUCE YOUR
PROCESSING COSTS!

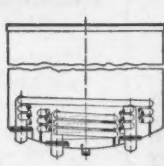
Individually designed for a specific processing operation and available in a wide range of sizes to fit your exacting requirements, Lee corrosion-resistant equipment is built to give you long years of peak performance with minimum maintenance.

Descriptive bulletins are available for any or all of the above units. Write for them today and discover how Lee can help reduce your processing costs.

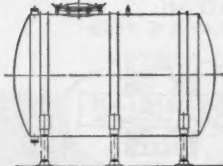
MIXING, COOKING & STORAGE TANKS



Mixing Tank
25 to 500 gal.



Pulp Tank
500 to 2,000 gal.



Storage Tank
100 to 5,000 gal.

LEE

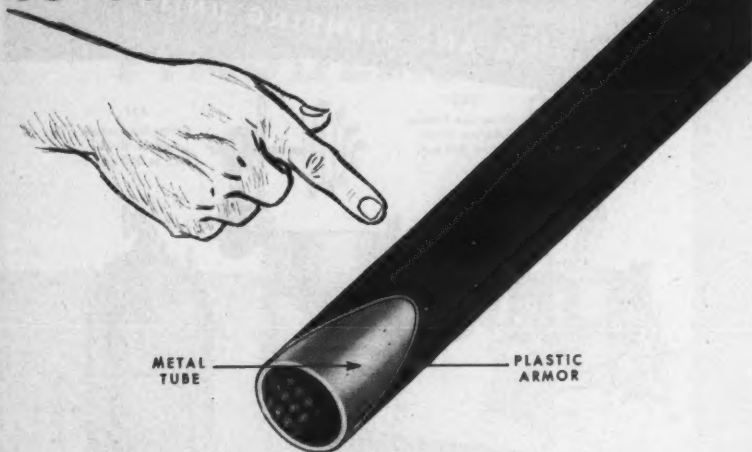
METAL PRODUCTS CO., INC.

418 PINE STREET,
PHILIPSBURG, PA.

ALL LEE KETTLES ARE MADE TO A.S.M.E. CODE

When inquiring check CP 2451 on handy form, pgs. 2-3

HERE'S YOUR ANSWER TO CONDUIT CORROSION



Are you looking for conduit that will stand up under your toughest corrosive conditions . . . in areas where chemical fumes and atmospheres normally chew up electrical raceways?

Then consider "Dekorun-Coated" ELECTRUNITE E.M.T. This strong, rigid steel raceway gives you double protection. First, there's a zinc coating over the steel. Over that, an extruded coat of polyethylene . . . an end-to-end armor that protects against attacks from most fumes and chemicals. And, that includes everything from hydrofluoric acid fumes to meat plant atmospheres.

ELECTRUNITE "Dekorun-Coated" E.M.T. is easy to assemble, using regular compression fittings. An application of polyethylene or vinyl-backed electrical tape quickly seals connections against fumes . . . maintains corrosion-resistance for the entire run.

If you've been replacing your conduits too frequently, it will pay you to get the facts about "Dekorun-Coated" ELECTRUNITE E.M.T. . . . the raceway that adds life to your wiring system . . . in your toughest corrosion areas. Write for the free data booklet DEK-15 describing where and how to use Republic ELECTRUNITE "Dekorun-Coated" E.M.T.

STEEL AND TUBES DIVISION
REPUBLIC STEEL CORPORATION
205 EAST 131st STREET • CLEVELAND 8, OHIO

Republic
ELECTRUNITE
"Dekorun-Coated" E.M.T.
LIGHTWEIGHT THREADLESS RIGID STEEL RACEWAY

When inquiring check CP 2452 on handy form, pgs. 2-3

CORROSION

**Exposure of 52 years
offered as testimony
to Al alloys . . .**

protective film decreases penetration rate of weather

Service installations and controlled tests of aluminum alloys conducted by manufacturer for periods of from 20 to 52 years exposure prove the high resistance of the metal to weathering. This is attributable to the "self-stopping" nature of the attack; that is, the formation of protective films which cause the rate of weathering to decrease markedly with time.

Data indicate that after an initial exposure period of one to two years, maximum rate of penetration of corrosion is less than 0.2 mil per year for the most adverse conditions, such as seacoast atmospheres. Penetration is less than 0.1 mil per year for atmospheric weathering conditions normally encountered.

Although some differences in resistance to weathering were noted among the aluminum alloys, differences are of little practical significance. Final choice of alloy depends on other important requirements such as strength, formability, weldability, and appearance.

(Technical paper "Resistance of Aluminum Alloys to Atmospheric Weathering," was presented at the recent National Association of Corrosion Engineers Convention in Chicago. The paper was written by C. J. Walton, J. A. Nock, Jr., and D. O. Sprowls of the Aluminum Co. of America, Dept. CP, 801 Gulf Bldg., Pittsburgh 19, Pa. . . . check CP 2453 on handy form, pages two and three.)

Plastics information for corrosion engineers

Announcement is made of the availability of a 35-page booklet on plastics for construction. The material, which has been prepared specifically for corrosion engineers, is now being expanded and will be published in book form later this year.

Booklet on plastics materials can be obtained from Atlas Mineral Products Co., Dept. CP, Mertztown, Pa. When inquiring specify CP 2454 on convenient Reader Service slip, pages 2 and 3.

Ceilcrete

a stonelike corrosion proof
trowelled on surface



TOPPING for FLOORS • WALLS
ACID HOLDING TANKS • WASTE
DISPOSAL SYSTEMS, ETC.

THE CEILCOTE COMPANY
4832 Ridge Road, Cleveland 9, Ohio

Send for technical data
on its application, corrosion
resistance properties



When inquiring check CP 2455 on handy form, pgs. 2-3

have
you
a
CORROSION
problem?

BOLTS • NUTS
SCREWS • RIVETS
COTTER PINS
WASHERS
SPECIALS

— IN BRASS
SILICON BRONZE
NAVAL BRONZE
COPPER
NICKEL
ALUMINUM
MONEL
STAINLESS STEEL

Harper Everlasting Fastenings are corrosion-resistant — produced from non-ferrous metals and all stainless steels. For fastenings that improve the appearance of your equipment—add years to its life, call Harper—largest manufacturer in its field. Over 7,000 different items in stock to meet your requirements. Write for catalog.



The H. M. Harper Company
8241 Lehigh Avenue
Morton Grove, Illinois
Please send me Harper Catalog 25.

Name.....
Company.....
Address.....
City.....State.....

When inquiring check CP 2456 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Interior wall of plastic pipe
resists build-up of paraffins,
reduces friction losses . . .**

withstands hydrogen sulfide gas, salt water, and corrosive soils

Uses: For numerous piping needs in the petroleum industry. It can be used above ground as well as in buried installations. The plastic pipe is recommended by manufacturer for lead lines; gathering lines; salt water disposal systems; lines handling crude oil, raw gas, or gasoline; and for fresh water piping. In addition, it can be used from gun barrel to stock tanks, as risers from manifold to boot, and as overhead piping for the expulsion of hydrogen sulfide gas.

Features: The rigid plastic pipe has an interior wall finish which resists the build-up of paraffins, asphalts, or other precipitated solids and reduces friction losses to a minimum. It is reported to have maximum resistance to hydrogen sulfide gas, salt water, and corrosive soils. When used above ground, it withstands the ultraviolet rays present in sunlight. Material is resistant to rot, rust, or electrolytic corrosion. It has high tensile and flexural strengths and great burst resistance, according to manufacturer's report.

Description: This rigid plastic pipe is extruded from an inert material. It is supplied in standard 10 and 20-foot sections with either cemented slip-sleeve or threaded connections. The 20-foot sections are furnished with necessary slip-sleeves or threaded upset adapters attached. Piping can be connected quickly, permitting fast low-cost installation.

Since the pipe weighs only $\frac{1}{8}$ th as much as steel, it reduces transportation and handling costs. One man can carry several sections, no heavy materials handling equipment being required.

(Carlton "L" plastic pipe is development of Carlton Products Corp., Dept. CP, 10225 Meech Ave., Cleveland 5, Ohio . . . or for more information check CP 2457 on convenient Reader Service slip, pages two and three.)

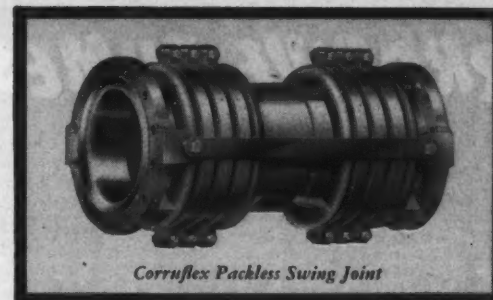
**How rubber linings can
prevent corrosion**

Methods of preventing corrosion from the effects of chemicals by the use of rubber linings are covered in eight-page bulletin. Use of rubber linings for tank cars, tank trucks, steel drums, pipe, valves, pumps, tanks, and filters are described in publication.

Of particular interest is tabulation of the resistance characteristics of rubber linings to a large number of chemicals at specified temperatures. Preparation of pipe, fittings, and welded fabrications for rubber linings is also explained.

Catalog "Rubber Linings" is issued by Protective Coatings Div., Metalweld, Inc., Dept. CP, Scotts Lane & Abbottsford Ave., Philadelphia, Pa. When inquiring specify CP 2458 on handy Reader Service slip, pages 2 and 3.

**FOR LEADERSHIP
IN EXPANSION JOINTS**



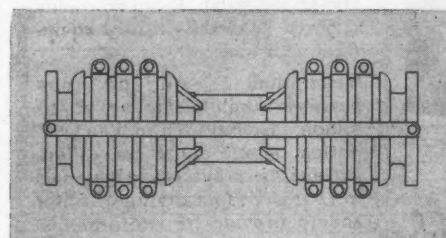
Corruflex Packless Swing Joint

Swing with **ADSCO**

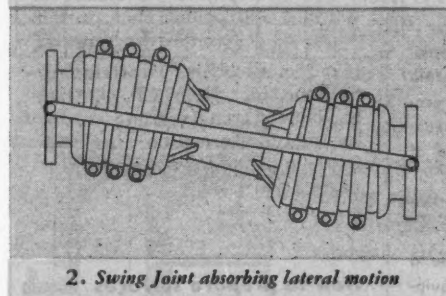
ADSCO...leading the field in expansion joints...because only ADSCO makes a complete line. This is important to you, for no other manufacturer can offer an impartial recommendation between slip and packless joints. ADSCO does not have to recommend the wrong joint simply because it does not make the right one. ADSCO makes the right one and can sell exactly what you need.

The Corruflex Packless Swing Joint described on this page is an illustration of the completeness and thoroughness of ADSCO's line. Here is a joint engineered for special piping conditions. In piping arrangements where normal anchoring is impossible, as in elevated pipe lines, the Swing Joint absorbs lateral motion as shown in Drawing 2 or angular rotation as shown in Drawing 3. In the Swing Joint, the bars absorb the thrust of the line.

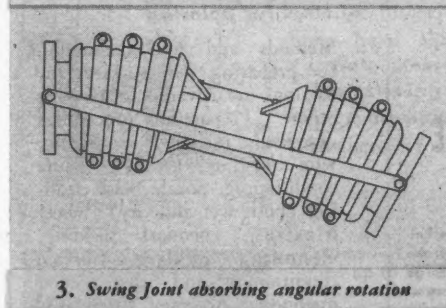
Whatever the problem, there is a specific ADSCO joint to solve it. Call an ADSCO representative or write for further details.



1. Swing Joint in normal position

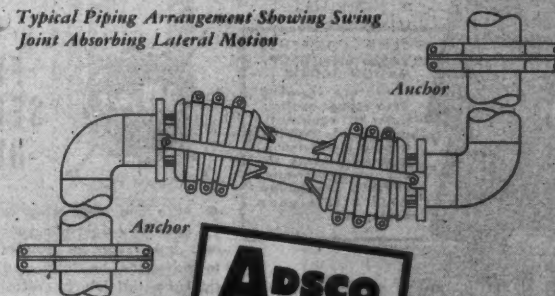


2. Swing Joint absorbing lateral motion



3. Swing Joint absorbing angular rotation

Typical Piping Arrangement Showing Swing Joint Absorbing Lateral Motion



EXPANSION JOINTS
HEAT EXCHANGERS
STEAM TRAPS

STRAINERS
SEPARATORS
METERS

AMERICAN DISTRICT STEAM COMPANY, INC.
NORTH TONAWANDA, NEW YORK
Since 1877

When inquiring check CP 2459 on handy form, pgs. 2-3

CORROSIVE FUMES?



CORROSIVE MATERIALS STORAGE?



ARco rubber lined Handy Tanks—available with or without snap-on covers—stock 10, 15, 30 and 55 gals.—any size made to specifications.

ARco RUBBER LININGS ...that's the answer!

● Complete ventilation systems . . . ARco engineered, fabricated and installed . . . can alleviate your corrosive fumes problem efficiently and economically. ARco know-how, based on years of experience in the chemical field, is your assurance of rubber insulated equipment equal to your needs . . . whether your problem be processing, transportation, ventilation, storage or production.

Your conference with an ARco Engineer will be a good investment in protection . . . for your equipment . . . for your profits!

SEND FOR THIS VALUABLE INFORMATION TODAY!

Literature showing ARco rubber applications to equipment, parts and installations in every industrial field. Write today—see the economy, efficiency and quality ARco offers your operation.



FIELD SERVICE UNITS

● ARco Engineers bring complete technical know-how right into your plant. Permanent installations or equipment too large to move can be fabricated and covered right on the job by ARco Field Service Units.

LICENSED RUBBER APPLICATORS

AUTOMOTIVE RUBBER CO., INC.
8617 EPWORTH BLVD. DETROIT 4, MICHIGAN

ARCO RUBBER PROCESSORS
4033 HOMESTEAD ROAD • HOUSTON, TEXAS

MANUFACTURERS • DESIGNERS • ENGINEERS

ANYTHING CAN BE COVERED WITH RUBBER—BY ARco

When inquiring check CP 2460 on handy form, pgs. 2-3

CORROSION

Protects iron and steel against rust in 100% humidity . . .

leaves almost no visible film on metal

Uses: To prevent rusting of steel, cast iron, and other iron alloys during storage. It is recommended by manufacturer to keep metals from rusting following cleaning, pickling, descaling, burnishing, and tumbling.

Features: Tests have indicated that product will protect iron and steel against rusting in 100% humidity for several weeks or more. It leaves almost no visible film on the metal. It can be readily removed by washing coated equipment with water.

Description: Anti-rust compound is a mildly alkaline, water-soluble material used in a concentration of one ounce per gallon. It contains surface active materials to facilitate rapid drying of water and to provide for uniform distribution over the surface of the object. Compound is available in 100 and 300 pound fiber packed drums as a free-flowing powder.

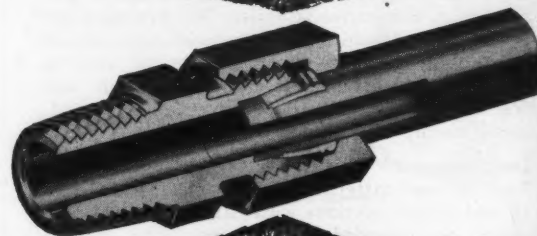
(Compound NR-31 is product of Enthone, Inc., Dept. CP, 442 Elm St., New Haven 11, Conn. . . or for more information check CP 2461 on handy Reader Service slip, pages 2 and 3.)

How to prepare surfaces of steel for painting

Methods and recommendation for preparing steel surfaces for coatings are covered in 13-page report. Preparation procedures described include weathering, wire brushing, grinding, flame conditioning, nozzle blast cleaning (both wet and dry), wheel blasting, chemical pickling, electrolytic pickling, surface conditioning, and other related methods. Accepted standards are discussed and safety measures indicated.

Second interim report of this NACE committee, designated as Publication 53-1, may be obtained from National Association of Corrosion Engineers, Dept. CP, 1061 M & M Bldg., Houston 2, Tex., at \$1 each or 5 or more copies 50c each to one address.

Get a Leakproof Corrosion Resistant Connection in 30 Seconds with WEATHERHEAD ERMETO® Stainless Steel Fittings



NO FLARING! No Threading! No Welding! No Soldering!

Patented ERMETO design means you can make a positive, leakproof, vibration-resistant connection in just 30 seconds—using only a wrench!

ERMETO provides a seal that's good for the life of the tube. The joint can be disassembled and reassembled over and over again.

All these advantages, plus resistance to corrosion, make Weatherhead ERMETO Stainless Steel Fittings your best buy for chemical applications.

WRITE for ERMETO CATALOG The Weatherhead Company, Dept. M-2, 300 East 131st Street, Cleveland 8, Ohio.



When inquiring check CP 2462 on handy form, pgs. 2-3

Suggests ways to prevent corrosion of metals due to vanadium in crude fuel oils

A recent investigation at M. I. T. suggests ways in which corrosion may be prevented in furnaces, gas turbines, and heat exchangers operating on crude fuel oils containing vanadium at temperatures above 1200°F. One method is addition of oxides of calcium, magnesium, and nickel. These compounds form high melting compounds with V_2O_5 and are capable of inhibiting accelerated oxidation. Anticipated increase in use of crude fuel oils containing vanadium in high temperature installations warrants experimentation on the problem.

A more thorough understanding of the mechanism of accelerated oxidation is also justified by the increased use of vanadium and molybdenum in heat resistant alloys. With the mechanism of corrosion better understood, means for combating it may be more readily found. Accelerated oxidation, so named because presence of an oxide layer increases oxidation rather than decreases it, has been studied in past.

Although methods for overcoming it have met with some measure of success, they have not been entirely satisfactory thus far.

In addition to studying effect of various refractory metal oxides, present investigation made chemical analyses and conducted X-ray diffraction studies to secure further information. Tests were run on type 347 stainless steel in contact with liquid vanadium pentoxide. Besides the inhibiting effect of the oxides, the following information was obtained.

Na_2SO_4 promotes accelerated oxidation below the melting point of V_2O_5 by forming a liquid phase with the latter, but at temps above melting point of V_2O_5 , Na_2SO_4 diminishes accelerated oxidation.

In contrast to normal oxidation, the oxide structure at the metal-oxide interface is oxidized to a higher level than the structure at the atmosphere-oxide surface. Also, a critical partial pressure of oxygen was found to exist, below which accelerated oxidation does not occur. Concentration of vanadium in the oxide scale was found to increase as the metal-oxide interface was approached.

A metal-vanadium-oxygen compound, having the orthorhombic $VCrO_4$ structure has been found near the metal-oxide interface. It has been proposed that this structure is in equilibrium with a thin molten film high in vanadium which is the corrosive medium in accelerated oxidation.

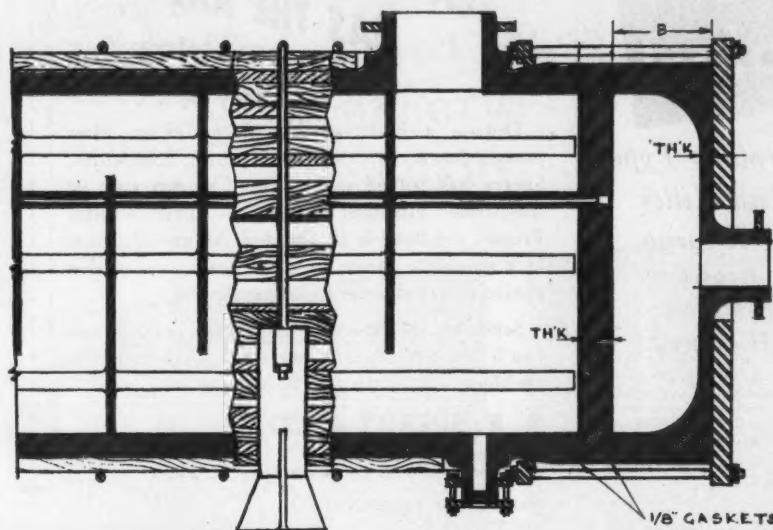
("An Investigation of Accelerated Oxidation of Heat Resistant Metals due to Vanadium," was delivered at the recent conference of the National Association of Corrosion Engineers in Chicago. Authors are F. C. Monkman and N. J. Grant, Dept. CP, Mass. Inst. of Technology, Cambridge, Mass.).

PROCESSING & ENGINEERING

DATA Section

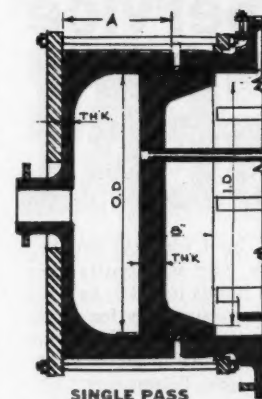
on pages 168, 170, 172 and 174

Standard Pressure HAVEG Heat Exchangers . . .



SHELL I.D.	SHELL O.D.	SHELL THK.	WORKING PRESSURE	NO OF TUBES	TOTAL EFFECTIVE TUBE AREA Sq Ft		FLOATING TUBE SHEET			FIXED TUBE SHEET	MAINT. BUFFLES		HEADS		
					INSIDE	OUTSIDE	I.D.	O.D.	THK.		LIQUID	STEAM	THK.	A	B
13 1/4"	15 1/4"	1 1/2"	75	33	65	92	10 7/8"	12 7/8"	2 1/2"	2 1/2"	20	4	3/4"	7	5
15 1/4"	17 1/4"	1 1/2"	75	48	94	134	12 7/8"	14 7/8"	2 1/2"	2 1/2"	20	4	3/4"	7	5
17 1/4"	19 1/4"	1 1/2"	75	64	125	179	14 7/8"	16 7/8"	2 1/2"	2 1/2"	16	4	3/4"	8	6
19 1/4"	21 1/4"	1 1/2"	75	81	159	227	16 7/8"	18 7/8"	2 1/2"	2 1/2"	16	4	3/4"	8	6
21 1/4"	23 1/4"	1 1/2"	75	106	208	297	18 7/8"	20 7/8"	2 1/2"	2 1/2"	16	4	3/4"	10	8
23 1/4"	25 1/4"	1 1/2"	75	134	263	376	20 7/8"	22 7/8"	2 1/2"	2 1/2"	16	4	3/4"	10	8
25 1/4"	27 1/4"	1 1/2"	75	162	316	453	22 7/8"	24 7/8"	2 1/2"	2 1/2"	10	4	3/4"	12	10
27 1/4"	29 1/4"	1 1/2"	75	192	376	537	24 7/8"	26 7/8"	2 1/2"	2 1/2"	10	4	1"	12	10
29 1/4"	31 1/4"	1 1/2"	75	235	461	658	26 7/8"	28 7/8"	2 1/2"	2 1/2"	10	4	1"	12	10

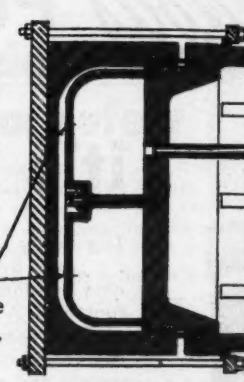
*WORKING PRESSURE: MAX. OPERATING PRESSURE TUBES OR SHELL SIDE P.S.I.G.
MAX. STEAM PRESSURE 25 P.S.I.G.



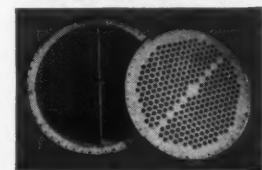
SINGLE PASS

A Haveg Heat Exchanger offers a variety of floating head types. Standard single pass head (left) is interchangeable with multi-pass head (Detail 2).

Note pressure neutralizing holes. Haveg machines to close tolerances for a tight fit.



MULTI-PASS BAFFLE
DETAIL #2



Coolers — Low pressure chlorine coolers may be supplied up to 10' diameter. All parts are replaceable; any kind of tubes or packing can be used. Multi-pass head features removable baffle. Because Haveg is molded, openings can be made any size or location. Usually steel water heads are supplied with gas passing through the shell, water passing through the tubes. Water heads may be removed without dismantling the Haveg Cooler; replacement of tubes is easily made.



CORROSION RESISTANT EQUIPMENT
FACTORY: MARSHALLTON, DELAWARE

HAVEG is a rigid moldable material (not a coating or lining) made by mixing acid-digested asbestos with special synthetic resins. Thousands of Haveg vessels, molded under heat and pressure at the Marshallton, Delaware factory, have outstanding service records, with excellent and uniform resistance to corrosion. Now Haveg is available for difficult, high temperature and pressure heat exchange applications. The use of corrosion-resistant Haveg makes possible the passage of corrosive liquids and gas either through the tubes or shell. Larger, longer-lived heat exchangers, coolers, towers can be rapidly molded and fabricated. Prices are competitive.

INSIDE-OUTSIDE CORROSION?

Resistant to practically all acids, chlorine, salts, many solvents . . . even at boiling temperatures . . . HAVEG gives complete protection on all surfaces of the heat exchanger. Because of chemical inertness and low heat conductivity Haveg is used in end tube sheets—fixed and floating; as the strong outer shell, for heads and baffles. Haveg is a non-conductor; electrolytic corrosion is no problem.

HIGHER HEATS AND PRESSURES

Haveg is resistant to thermal shock and can be used continuously up to 265° F. The pressure range of the new Standard Haveg Heat Exchangers is from 50 to 75 lbs., with a wide safety margin.

COMPLETE SIZE RANGE

Backed by twenty years of manufacturing experience, Haveg already has the molds . . . up to 10' diameter . . . for building any size or style low pressure heat exchanger, cooler, cylindrical tower. Standard Pressure sizes are from 13 1/4" to 29 1/4". Single or multiple pass. Special impingement plate protects tube bundle. Interchangeable end covers. Openings molded in at no extra cost; repairs or alterations in the field are easily made. Get information on new Standard Haveg Heat Exchangers, built to your prints, or cooperatively Haveg-engineered with your supplier.

Send coupon today . . . call your Haveg sales office in Atlanta, Chicago, Cincinnati, Cleveland, Detroit, Hartford, Houston, Los Angeles, Seattle, St. Louis. The Haveg Corporation, Newark, Delaware. Factory: Marshallton, Delaware. Wilmington 3-8884.

- ☐ Send 64-page F-5 Haveg Technical Bulletin.
☐ Send blueprint of Standard Haveg Heat Exchangers.
We're interested in ☐ Coolers ☐ Towers.
☐ Have Haveg Sales Engineer call.

Name _____ Title _____
Company _____
Address _____
City _____ State _____

When inquiring check CP 2463 on handy form, pgs. 2-3



Man-Cooler!

Coppus Airplane Type Heat Killer
cools large areas — restores efficiency



HEAT KILLER on the job in drop forge plant.



Steel mills, drop forge plants, foundries and other plants with hot working conditions find this Coppus Heat Killer increases worker efficiency . . . at reasonable cost. A single fan cools large areas.

Other types also available for cooling furnaces, electrical equipment, for driving out gases, drying out products, drawing out fumes. Write now for detailed information. COPPUS ENGINEERING CORPORATION, 387 PARK AVENUE, WORCESTER 2, MASSACHUSETTS.

When inquiring check CP 2464 on handy form, pgs. 2-3

SPERRY HAS THE ANSWERS

—Whatever Your Filtration Problems May Be . . .

During a half century of designing filter presses for America's manufacturing companies, Sperry has solved nearly every known type of industrial filtration problem. Sperry Filter Presses are flexible in size and design . . . there is a complete range of filter bases . . . and a choice of six different closing devices.

Send for the Sperry Filter Press catalog and you'll see why Sperry can solve your filtration problems efficiently and economically.

D. R. SPERRY & CO.

Batavia, Illinois

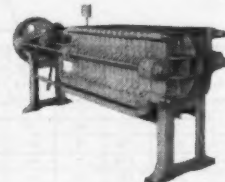
Filtration Engineers for More Than 60 Years

Eastern Sales Representative:

George Tarbox,
808 Nepperhan Ave.,
Yonkers 3, N. Y.
Yonkers 5-8400

Western Sales Representative:

B. M. Pilhashy,
833 Merchants Exchange
San Francisco, 4, California
DO 2-0375



When inquiring check CP 2465 on handy form, pgs. 2-3

Glass-lined equipment

Authors describe the specific equipment used in the preparation of organic compounds and attempt to tabulate the useful lives of observed vessels. Tabulate overall heat transfer coefficients in a variety of stated operating conditions. 9 pages, 11 figures, 6 tables. ("Transactions of the Institution of Chemical Engineers, London, Vol 28," page 140)

Heat transfer in condensation

Paper discusses the variations occurring on the perimeter of a horizontal tube upon which vapors are condensing. Expressed purpose "to investigate both theoretically and experimentally the error introduced by the assumption of a constant tube temperature". 5 pages, 5 figures, 4 tables. ("Industrial and Engineering Chemistry," December 1952, page 2962)

Recent developments in process instrumentation

Authors review changes which have been occurring in process control instrumentation, contrast the old with the new and state objectives of the changes. Interesting discussion by one who uses instrumentation to accomplish process control is included. 4 pages, 6 figures. ("Chemical Engineering Progress," December 1952, page 599)

Industrial wastes treated in trickling filters

Application of this method for sewage treatment is discussed as applied to various industrial wastes. Examples of BOD requirements of many industrial wastes are tabulated. Specific examples of ten waste waters, treated in trickling filters, are given. 6 pages, 3 photos, 2 flow sheets. ("Public Works," March 1953, page 75)

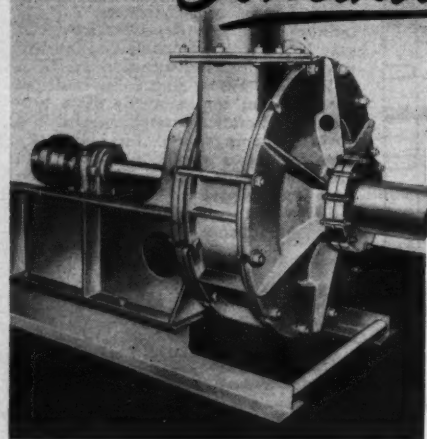
Addition compounds of urea, thiourea, their utilization

Author presents a theoretical discussion to explain the action of these materials. Presents data covering the separation of a variety of materials using this technique. Data includes the purity of separation products. 5 pages, 4 figures, 6 tables. ("Chimie et Industrie," March '53, page 431)

Liquid metal corrosion

Subject matter relates to the corrosion occurring when a molten metal is in contact with a solid

For Continuous Pumping Service it's VACSEAL



THICK RUBBER LINING and STAINLESS STEEL

Gum rubber linings from 1/2 to 1 1/2" thickness and replaceable stainless steel shaft sleeve and gland bushing are the protective features against corrosion.

This newly installed Vacseal Pump . . . built for acid service . . . will be operating 24 hours a day with a capacity for easy handling of 3,000 g.p.m., 150-foot heads and 10- to 12-foot lifts. A masterpiece of design and construction for acid and corrosive solutions at temperatures as high as 180° F. Its fabricated design and welded steel construction mean light weight and provide maximum room for rubber linings.

For full details on the NO SEALING WATER Vacseal Pump, write or wire today.

Leaders in Experience & Service

THE GALIGHER CO.

CONSULTATION • ORE TESTING
PLANT DESIGN • GEOLOGIC INVESTIGATION

HOME OFFICE: 545 West 8th South, Salt Lake City, Utah, P. O. Box 209.

EASTERN OFFICE: 921 Bergen Avenue, Jersey City, New Jersey

Agents in All Principal Foreign Mining Districts



When inquiring check CP 2466 on handy form, pgs. 2-3

from contemporary publications

Here's a quick look at interesting articles, appearing in other publications . . . as selected by the Editorial Staff of CHEMICAL PROCESSING

metal. Items to be studied: dimensional changes of the specimen, changes in the composition of the liquid metal, changes in chemical composition of the solid metal surface — evaluated by chemical or spectrographic analysis, weight changes of the specimen, changes in crystalline structure of the solid metal surface. Some examples are included. 6 pages, 16 figures. ("Corrosion," March 1953, page 78)

Multiple treating units for water purification

Author discusses first the conventional water purification plant, itemizing the component parts, then states how the plant under discussion departs from the conventional. Contrasts, construction costs, operating costs, and structural life. Lists 10 advantages of the multiple unit plant. 10 pages, 2 photos, 1 table. ("Journal of American Water Works Association," December 1952, page 1107)

Chemical engineering unit operations

Eighth annual review. Included are discussions covering the recent publications on fifteen unit operations. Some new authors appear, consequently some new viewpoints will be presented and some new process equipment described. An excellent compilation. 78 pages. ("Industrial and Engineering Chemistry," Jan. 1953, pg. 19)

Fluorocarbons: face, fame, and fortune

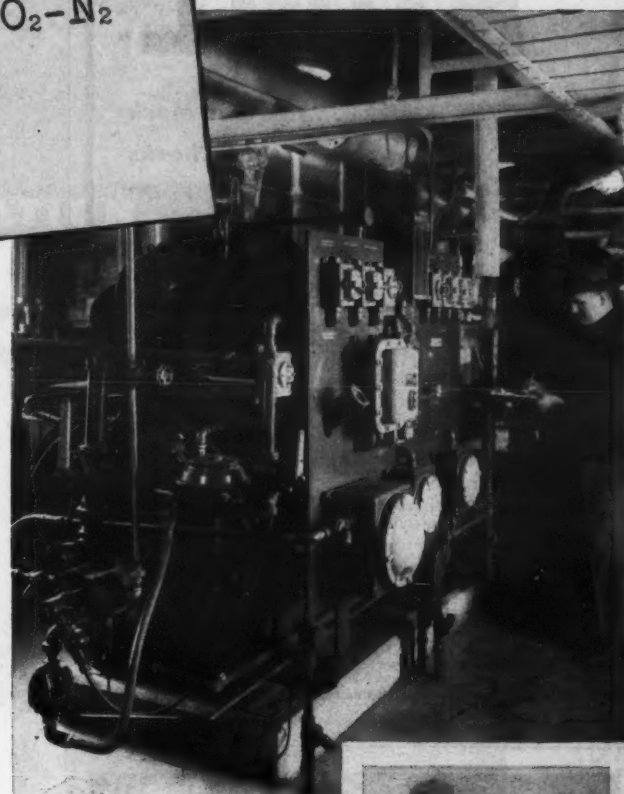
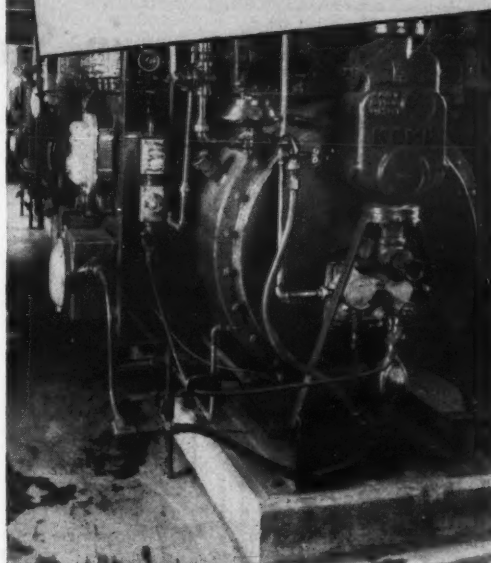
Article summarizes the development of these plastics. Written in popular style. Contains information not readily found elsewhere. Best known commercial examples are commented on and properties compared. Applications and source for various fabricated materials stated. 14 pages, numerous photos. ("Modern Plastics," December 1952, page 79)

Treating rendering plant wastes: why and how

A new flotation process is described. Applicable to treatment of rendering and meat packing wastes. System is described, operating data tabulated for 2 plants. 3 pgs., 4 fig., 2 tables. ("Water and Sewage Works," April '53, pg. 172)

Case No. 62

Kemp-Generated $\text{CO}_2\text{-N}_2$
Cuts Fire Hazard
at Polymer Corp.



How Polymer operated day and night for 10 years at maximum safety

When Polymer Corporation, Ltd., Sarnia, Ontario, began operations in 1943, inventory included two Kemp MIHE Inert Gas Generators. Since that date, Polymer—and its Kemp equipment—has been operating 24 hours a day, 365 days a year. The huge quantities of man-made rubber and associated chemicals it produces—200,000,000 pounds during one year alone—reach, in one form or another, the four corners of the world.

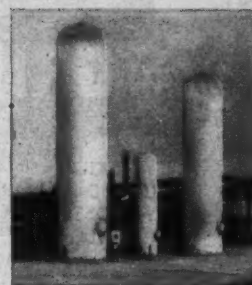
Kemp Plays an Important Role

The high volatility of many of the ingredients used in this giant operation necessitates blanketing and purging vessels after use. It is in this step that Polymer employs Kemp Generators to assure safe, trouble-free performance. The gas they produce is piped to different operations over the entire company area—it *must* be clean! Kemp does the job—

Polymer knows that it can depend on Kemp to deliver a *clean inert at a specific analysis, regardless of demand.* And every Kemp Generator is engineered for fast starts and easy operations that save *time and money.*

Kemp Can Do a Job for You

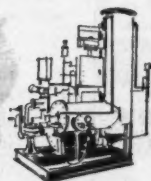
Kemp superiority is no accident. It is based on years of experience . . . on quality of design to meet specific problems. Every Kemp design features the Kemp Industrial Carburetor for complete combustion without tinkering or waste . . . for simplified installation and maintenance. Every Kemp design includes the latest fire checks and safety devices. If you have a blanketing or purging problem, contact Kemp engineers. They will be glad to study your situation and recommend the installation best suited to your needs. No obligation, of course.



Gas generator building from which inert gas is piped over 130 acres of company property at Polymer's Sarnia, Ontario, operation.

For more complete facts and technical information, write for Bulletin I-10 to: THE C. M. KEMP MFG. CO., 405 East Oliver Street, Baltimore 2, Md.

KEMP
OF BALTIMORE



INERT GAS GENERATORS

CARBURETORS • BURNERS • FIRE CHECKS
METAL MELTING UNITS • ADSORPTIVE DRYERS
SINGING EQUIPMENT

When inquiring check CP 2467 on handy form, pgs. 2-3

ACME



... the Gas Mask that Checks "Huff and Puff"

You can wear the Acme Full-Vision Gas Mask two or three times as long as others without worrying about "huff and puff." An exclusive Acme feature, the Dead Air Check Valve, actually limits the amount of carbon dioxide the wearer rebreaths and

thus helps to check breathing difficulties at their source.

This is another Acme innovation that proves that protection can be comfortable.

Write for the complete story on Acme Gas Masks for the chemical industry.

ACME PROTECTION EQUIPMENT CO.

3037 West Lake Street

Chicago 12, Illinois

When inquiring check CP 2468 on handy form, pgs. 2-3

Safety GRIP-STRUT

NON-SKID
RUGGED
LOW COST
VERSATILE

gives Maximum Strength
with Minimum Weight



A Globe
patent feature
(Patents Pending)

Not welded, not riveted, not expanded, all one piece of material, gives a non-skid surface in all directions, a diamond shaped pattern with open space area in excess of 75% of surface, easily cleaned, sanitary. Simple to install, ideal for on-the-job fabricating, replaces existing grating with no supporting structural changes necessary. Strong yet light in weight. Ideal for stair treads, work platforms, catwalks, flooring, running board steps, in fact for any purpose where safe flooring is a factor. Available in steel or aluminum. Write for new catalog, showing new low prices, methods of application, typical installations and list of nationally known users.

Distributors in all principal cities.

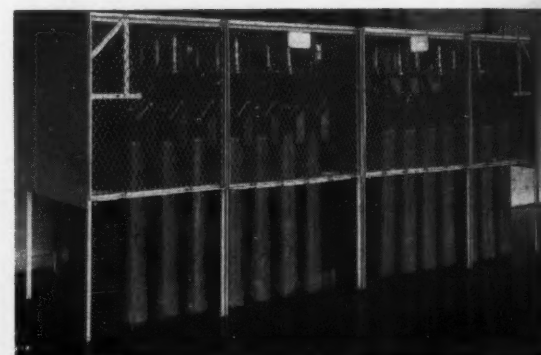
GRIP-STRUT division
THE GLOBE COMPANY

Manufacturers since 1914

4006 S. Princeton Ave. • Chicago 9, Ill.

When inquiring check CP 2469 on handy form, pgs. 2-3

Devise Unique System to Combat in Storage Bins for Sludge



These 75-pound cylinders constitute source of supply for carbon dioxide fire extinguishing system. They are located on out-of-door loading platform

Control panel for carbon dioxide fire extinguishing system. Being held is a directional valve controlling the flow of carbon dioxide to a storage bin. Boxes above this control the electrical release of gas from the cylinders — one for the main charge, other for reserve battery

Lower boxes control the main and reserve charges for ducts, and screening and cooling equipment. Each control box has green light (left) indicating that electricity to operate system is available; red light (right) indicates that carbon dioxide cylinders controlled by that box have been expended

safety

WITH the completion of Baltimore's new sludge drying plant, 1953 will see the city start a more economic method of waste disposal with an end product marketable as a fertilizer base. While the new \$2,100,000 drying plant is already in limited operation, it will be several months before capacity production of fertilizer base begins. Planned capacity is 40 to 50 tons of fertilizer a day.

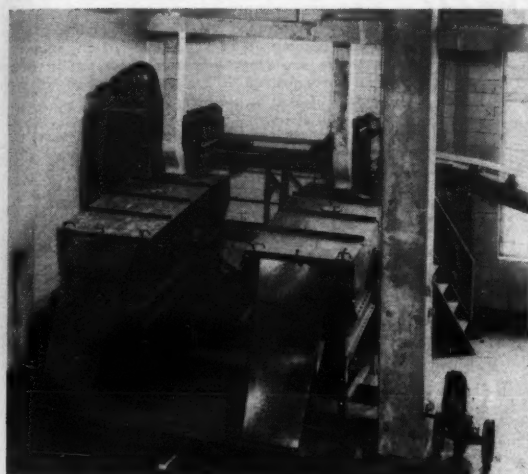
Process

Filtered sludge is carried on a belt conveyor into the plant at approximately 75% moisture and fed into three cage mills. Simultaneously, air, heated to 1000°F, is blown into the cage mills and dries the sludge. Suspended in the hot gas, the product passes through ducts to cyclone separators. There the dried material drops from bottom of separators and hot gas is exhausted.

bat

Incipient Fires

Extensive CO₂ fire extinguishing system protects inventory, and production equipment



These screeners stand approximately 12 feet high and segregate large or foreign matter from the dried sludge before it is dumped into one of the storage bins. 100-pound wheeled carbon-dioxide unit (arrow) is available for emergency use

Then the material enters a cooler on a conveyor belt, is screened to remove large or foreign matter, and dumped into one of three storage bins with a combined capacity of 300 tons.

Fire Hazard and Extinguishing System

The material being processed presents a fire hazard because of its carbonaceous, combustible character. To protect the product inventory and equipment in the new plant, an extensive fire extinguishing system was engineered. It employs carbon dioxide and guards the cooling and screening equipment, ducts and storage bins.

Fifty-six 75-pound cylinders situated on a protected, out-of-door loading platform constitute the main source of supply of the gas. They are arranged so that 28 of them can be expended as the primary charge for the bins while the remaining 28 stand as a reserve. If fire flashes in the production equipment

(Continued on page 122)

ACROSS THE NATION . . .

AND AROUND THE FREE WORLD . . .

You Get
MORE SERVICE

FROM

ANSUL

All Ansul Fire Extinguishing Equipment is backed by Ansul's personnel training and service policy . . . In addition, a written five year warranty guarantees each extinguisher is free of defects . . . assuring dependable fire protection.

Ansul Extinguishers have long been the leaders in the dry chemical fire extinguisher field because they provide the *best protection* for flammable liquid, gas and electrical fires.



Write for File No. N-10. Printed material supplied will be helpful to all men responsible for fire protection.

ANSUL OFFICES,
DISTRIBUTORS
AND DEALERS
SERVE ALL
PRINCIPAL CITIES
IN THE U. S. A.

EXPORT
DISTRIBUTORS
AND DEALERS
SERVE
31 COUNTRIES
AT OVER
60 LOCATIONS



ANSUL
Chemical Company

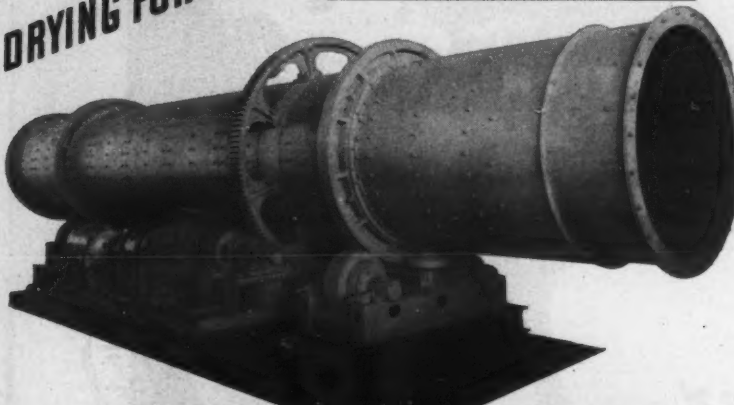
FIRE EQUIPMENT DIVISION • MARINETTE, WISCONSIN

MANUFACTURERS OF FIRE EXTINGUISHING EQUIPMENT, INDUSTRIAL AND FINE ORGANIC CHEMICALS, LIQUEFIED GASES AND REFRIGERATION PRODUCTS



When inquiring check CP 2470 on handy form, pgs. 2-3

DRYING FOR GREATER PROFITS...



**WITH STANDARD-HERSEY
ROTARY DRYERS**

More than 30 types of STANDARD-HERSEY DRYERS are available in all commercial sizes for every process industry need

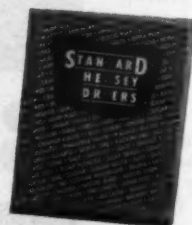
Here is a case where Standard-Hersey advanced engineering has made teamwork pay dividends in stepping up production of artificially colored roof granules.

With the previous system, consisting of dryer, kiln and cooler, in series, it was found that production was being limited by dryer capacity.

Addition of the Standard-Hersey pre-heater, shown above, rounded out the team. It works like a double header locomotive in sharing the dryer load and thereby cutting drying stage time. Urgent production schedules are being met at much lower cost than the outlay for a second complete 3-unit plant.

SEND FOR NEW DRYER BULLETIN

Complete illustrated brochure describing advantages and features of Standard-Hersey Dryers, Kilns, Coolers and Calciners; tells operation of Standard-Hersey "pilot" dryer for pre-testing your product. Write for Dryer Bulletin No. 531.



**STANDARD HERSEY
Dryers**

STANDARD STEEL CORPORATION

5083 Boyle Ave., Los Angeles 58 7 East 42nd St., New York 83

When inquiring check CP 2471 on handy form, pgs. 2-3

SAFETY

Stops unnecessary damage from sprinklers...

cuts off water without need for closing valve

Uses: Stops water flow and unnecessary damage from any sprinkler head that may have "let go" due to mechanical failure or fire.

Features: Operates without necessity for closing sprinkler control valve — thereby leaving rest of system ready to function in case of any other fire outbreak.

Description: Sprinkler-Stopper is basically a wedge-shaped head which is manually inserted by means of pole or rod into the ring of a sprinkler head. It consists of a spring-backed plate on one side and a Neoprene diaphragm on the other — latter to seal the water outlet. The wedge assembly is attached to a handle which enables it to be mounted on a rod or pole.

A socket handle mounts the wedge on a swivel so it can be set for upright or pendent sprinkler heads. Sufficient pressure can be applied when inserting the Sprinkler-Stopper to completely close the water outlet.

(Available from Sprinkler-Stopper Sales Co., Dept. CP, 15 West Palisade Ave., Englewood, N. J. . . . or for more information check CP 2472 on handy Reader Service slip, pages 2 and 3.)

Plastic temples telescope in and out...

no need to stock different size safety goggles

Uses: Eye protection.

Features: Goggles incorporate all-plastic Retrax (trademark) temples. The "ball-chain" hook design fits into the cartilage formation behind the wearer's ears and holds glasses firmly in position.

The temples telescope in or out to adjust to any length desired. This feature makes it unnecessary to stock a supply of several different frames with temples of different lengths.

Description: Model 415 Tuc-Away goggle is of all plastic construction. It is reported that universal nose-piece fits over 90% of all faces, thereby eliminating a

Famous Holes



**H & K
Perforated Holes**

THE HOLE IN THE DIKE — History tells us of the brave Dutch lad who, until help came, plugged this hole with his finger. History too, 70 years of it, has made for H & K an honored name in the business of perforating. They say "if it can be perforated H & K can perforate it."

We perforate round holes 1/50" in diameter and others ranging up to 9" diameter, slots, squares, triangles and other shapes — thousands of sizes and arrangements in stainless steel and all the metals, as well as plastics.

Send us your problems and your specifications—our engineers will be glad to help.

**Harrington & King
PERFORATING CO.**

5636 Fillmore Street, Chicago 44, Illinois
114 Liberty Street, New York 6, New York

Complete catalog
No. 62 sent gratis
upon request

When inquiring check CP 2473 on handy form, pgs. 2-3

**NoDrip ...STOPS
CONDENSATION
DRIP!**



NoDRIP PREVENTS RUST
in addition to stopping drip and keeping floors dry.

ANYONE CAN APPLY
Brush, trowel or spray NoDrip on tanks, condensers, suction lines, vats, pipes, walls, ceilings, etc. NoDrip adheres to metal, concrete, brick, plaster. It forms a seamless covering that is effective as soon as dry. Acid, alkali and brine resistant.

Interesting 32-page Handbook shows what NoDrip is and what it does. It's free. Send coupon today.

☐ SEND NoDRIP HANDBOOK

NAME

COMPANY

ADDRESS

CITY STATE

J. W. MORTELL CO., 530 BURCH ST., KANKAKEE, ILLINOIS
TECHNICAL COATINGS SINCE 1895

When inquiring check CP 2474 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Obtain Better Lighting for the Seeing Task

in **EXPLOSIVE ATMOSPHERES**
with **BENJAMIN**
EXPLOSION
PROOF
lighting units

If safety regulations, fire insurance or building code call for UL-approved Explosion-Proof lighting, you need not sacrifice proper lighting in order to meet these requirements. You need not handicap workers with poor light which does not fit their particular seeing task. You need not stand for production slow-down in such locations due to improper illumination. The wide variety of reflectors available with Benjamin Explosion-Proof units makes it possible to provide the cor-

rect light for every seeing task found in industrial explosive atmospheres. For utmost protection against depreciation and deterioration, each reflector is covered with "Life-Time" Porcelain Enamel fused to steel... the unsurpassed reflecting surface which resists the corroding effects of fumes, moisture and grime and is easily cleaned with soap and water. **Free Bulletin EP** contains complete Explosion-Proof lighting facts.

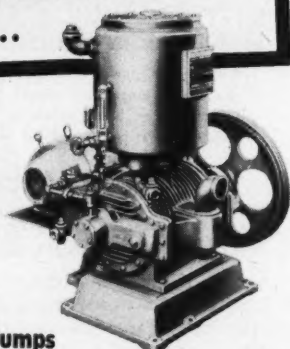
BENJAMIN ELECTRIC MFG. CO., Dept. LL, Des Plaines, Illinois 336



When inquiring check CP 2475 on handy form, pgs. 2-3

When Your Process Calls for
"DOWN TOWARD EARTH"
VACUUM...

When you need vacuum in the range between 5 mm and 10 microns, there is no equipment that will give you more dependable, economical or faster "pump-down" than



BEACH-RUSS
Rotary High Vacuum Pumps

And if you need vacuum in the "high altitude" range, up where the molecules are rare... remember that you have to progress through moderately high vacuum to reach your ultra-vacuum goal. Beach-Russ Pumps get you to the point where you can start reaching for very high vacuum... get you there faster and at minimum over-all cost.

Write for bulletins on Beach-Russ Type SS and RP Rotary High Vacuum Pumps.

BEACH-RUSS COMPANY
46 CHURCH STREET - NEW YORK 7, N. Y.

When inquiring check CP 2476 on handy form, pgs. 2-3

SAFETY

large portion of inventory expense. Three different style lenses fit into Model 415 frame: Regular Side Shield for average eye hazards, full



Three differently styled lenses fit frame of all-plastic goggles

1" Side Shield for clear view side protection, and the Semi-Cup Lens for side and bottom protection. All lenses are made of shatter-proof methyl methacrylate and are available in clear or light, medium and dark green.

(Available from Dept. N64, Watchmocket Optical Co., Inc., Dept. CP, 232 W. Exchange St., Providence 3, R. I. . . or for more information check CP 2477 on handy Reader Service slip between pages 2 and 3.)

Combats hazards and dangers of wet and slippery floor . . .

easy-to-clean mats lay flat or roll up

Uses: Provide footing where moisture, oils, animal fats, chemicals, solvents and abrasives are apt to be on floors. Plants are using these mats on walking surfaces, loading platforms, elevators, cat walks, ramps, inclines and steps.

Features: Rubber used is said to resist deterioration by the above-mentioned materials.

Description: GS-Mats are corrugated mats made of specially compounded rubber links woven on 12-gage spring steel wire. They are available in any desired length and in widths up to 48".

(Manufactured by General Scientific Equipment Co., Dept. CP, 2700 W. Huntingdon St., Philadelphia 32, Pa. . . or for more information reader may simply check CP 2478 on handy Reader Service slip between pages two and three.)

"This is our last costly shutdown because of breathing hazards



. . . Order some
Scott Air-Paks
and get those repair
jobs done in hours
instead of days"

Ed: Right! The man hours we've already lost would pay for a carload of SCOTT AIR-PAKS. We can't afford to slow up production any longer just because our maintenance men don't have efficient breathing equipment.

S.D: We certainly can't. It took too long to clear out the fumes so that our men could make the repairs in safety. If we had

SCOTT AIR-PAKS, our men could have gone into those fumes and finished the job in a few hours!

Ed: That's right . . . and our safety men tell me SCOTT AIR-PAKS can be put into operation on the double . . . plus the fact that they have the lowest operating cost of any breathing equipment.

S.D: How soon can we get SCOTT AIR-PAKS here so this won't happen again? We've got to maintain continuous production.

Why not get on the phone or wire Scott for the name of their nearest Safety Equipment Distributor.



SAFETY EQUIPMENT DIVISION
SCOTT AVIATION CORP.

242 ERIE ST., LANCASTER, N. Y.

CANADA: SAFETY SUPPLY CO. TORONTO - BRANCHES IN ALL PRINCIPAL CITIES
EXPORT: SOUTHERN OXYGEN CO. 157 Chambers Street, New York 7, N. Y.

When inquiring check CP 2479 on handy form, pgs. 2-3

Licked before they start!

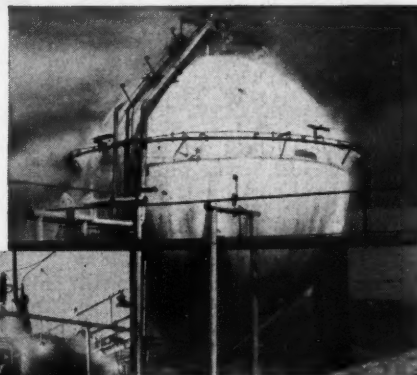
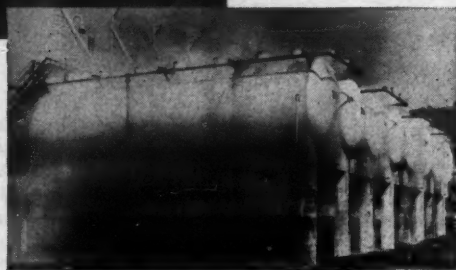
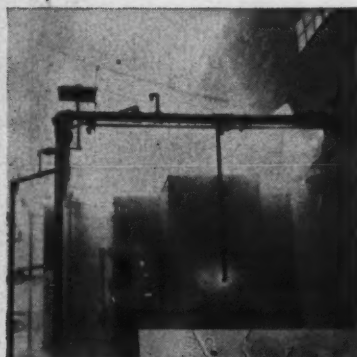
BLAW-KNOX FOG SYSTEMS DON'T GIVE FIRES A CHANCE TO GROW UP

Chemical and petroleum fires strike fast with little or no warning. But not so fast that a Blaw-Knox Fog System actuated by rate-of-rise thermostats can't knock 'em out with a smothering blanket of fog *before* they really get started.

A Blaw-Knox System engineered for the fire hazards existing in or around your plant is a most effective weapon against fire's toll. On the job 24 hours a day, it protects your property as well as products essential to our national economy.

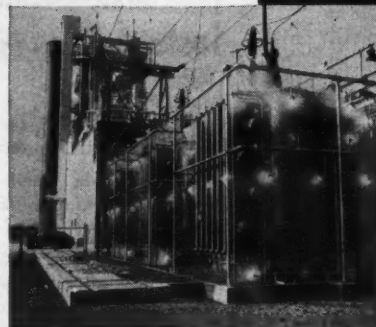
Glad to consult with you and submit an estimate without obligation.

BLAW-KNOX COMPANY
AUTOMATIC SPRINKLER DEPARTMENT
Pittsburgh 33, Pa.



Deluge Systems, Wet Pipe Systems, Dry Pipe Systems, Water Spray and Fog Systems, Rate-of-Rise Sprinkler Systems, and Foam and Carbon Dioxide Extinguisher Systems.

"LITTLE JOEY SPRINKLER"
Always on the Job



BLAW-KNOX

AUTOMATIC
FIRE PROTECTION SYSTEMS

When inquiring check CP 2480 on handy form, pgs. 2-3

Incipient Fires

(Continued from page 119)

into an indicator panel provides a means of detecting any undue heat conditions which might result from spontaneous combustion of the stored material. Upon noticing a rise in temperature at any spot in a bin, the plant operator can do one of two things.

First — he can discharge carbon dioxide into the "hot" bin from the battery of storage cylinders by means of the electric switch and manually-operated direction valve. Carbon dioxide is discharged into the bins from specially designed frangible disc-type nozzles to guard against the possibility of any of the product clogging the orifices. Feature of the piping-nozzle arrangement throughout each bin is that it



Passage of carbon dioxide to duct work will throw the pressure-operated switch (directly above hand of individual on left) which in turn releases the chain. This permits the weighted lever below to turn and close the air intake vent. Carbon dioxide discharge nozzle (circle) is flanged into vent housing

or ducts, seven cylinders of the primary supply can be actuated with a corresponding number as reserve.

System is controlled electrically from a panel and can also be actuated manually by pull boxes at the cylinders. Panel contains two sets of controls — one to actuate that part of the system guarding the ducts, cooling and screening equipment; the other control is for the storage bins.

Each set has electrical switches for both the main charge and the reserve, in addition to levers which position directional valves. The system is self-monitoring and has green lights which indicate that power is available to operate the system and red lights which appear if a bank of cylinders has been discharged.

If a fire occurs in the duct work, for example, all that an employee has to do is throw the switch for the appropriate bank of cylinders, turn the clearly marked lever, and carbon dioxide from seven 75-

Edw
Go

Wear has b
and loose
in these Edw
through clos
accurately k
faces and w
body, cuttin
preventing
from 2 1/2" t
ends. Featur

- One-piece alignment
- Bell bearing operation
- Integral surfaced length
- Two tight uniform distortion
- Needleless working

Write for C
for complete

Edw
Subsidiary
1230 West

When in



MA
CO

To save
nies, in
MARIET
material
tem. The
concrete
tect st
help yo
and el
from g
They ar
erected
tions to
or futu
ding e
money
handling
terial, g

When i

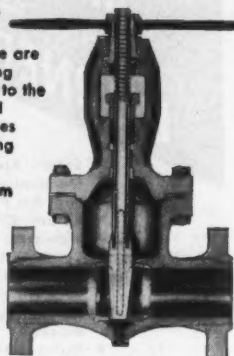
JULY

Edward CAST STEEL Gate Valves

300, 600, 900 AND 1500 LB

Wear has been reduced to a minimum and looseness of gate eliminated in these Edward Gate Valves through close fitting wedge guides. These are accurately located with respect to seating faces and wedge, then welded integral to the body, cutting clearances to minimum and preventing wedge drag. Furnished in sizes from 2 1/2" to 12" with flanged or welding ends. Features include:

- One-piece bonnet for accurate stem alignment
- Ball bearing yoke for easy operation
- Integral but replaceable hard surfaced seats greatly lengthen valve life
- Two tight seating faces
- Uniform metal sections reduce distortion in heating and cooling
- Needless weight and unnecessary working parts eliminated



Write for Catalog No. 12E for complete information.

Another  Product

Edward Valves, Inc.

Subsidiary of ROCKWELL MANUFACTURING COMPANY
1230 West 144th Street, EAST CHICAGO, INDIANA

When inquiring check CP 2481 on handy form, pgs. 2-3



"King Size Piggy Bank"

**MARIETTA
CONCRETE
SILOS**

To save dollars, not pennies, invest in a modern MARIETTA storage and materials handling system. These large capacity concrete stave silos protect stored materials, help you build reserves and eliminate drawing from ground storage. They are engineered and erected to your specifications to take your present or future materials handling equipment. To save money on storage and handling of any bulk material, get in touch with—

The MARIETTA CONCRETE Corp.
MARIETTA, OHIO

501 Fifth Avenue, New York 17, New York
Pulaski Hwy. at Race Rd., Baltimore 21, Md.
805 Bessemer Bldg., Pittsburgh 22, Pa.
Hollywood, Florida

Branch Offices

When inquiring check CP 2482 on handy form, pgs. 2-3

SAFETY

pound cylinders passes through piping and is discharged into the ducts and operating machinery from nozzles flanged into the equipment. Simultaneously, the flow of carbon dioxide through the piping throws two pressure-operated trips causing two duct air intake vents to close.

Perhaps the most interesting feature of the installation is the protection for the storage bins. Installation of thermocouples which are tied permits carbon dioxide to be discharged at four different levels. First level is at the top of the bin; the second, 8 feet below; the third, 16 feet below; and the fourth, 24 feet below. In this way an effective blanketing of the enclosure with gas can be achieved.

Second — the operator can locate the "hot spot" in the material and eliminate it. To do this he turns on a rotating conveyor which draws material from one bin and transfers it to another. With this method, the operator floods the bin into which he is going to transfer any smoldering material with carbon dioxide. As the "hot spot" moves from bin "one" toward bin "two", the thermocouples follow its path and indicate how close it is to the discharge end of bin "one". As it is about to be discharged, it is dumped to the ground by means of a lever. This eliminates the "hot spot" with very little loss of the fertilizer base.

Circulation of the material from bin "one" to bin "two", which is filled with carbon dioxide, eliminates the possibility of a recurrence of smoldering type fires.

In addition to the above fixed system of carbon dioxide extinguishment, wall-mounting and wheeled carbon dioxide extinguishers are located at focal points.

(Carbon dioxide fire extinguishing system was installed by Walter Kidde & Company, Inc., Dept. CP, Belleville 9, N. J. . . . check CP 2483 on form, pages 2 and 3.)

**A company name
and address . . .**

at end of each editorial article
makes it easy to follow-up on
ideas you read about in these
columns . . . saves you time.
Write direct or use the handy
Reader Service slip.

THE EDITORS

SLY

PIONEERS and LEADERS

in INDUSTRIAL DUST CONTROL



Soy Bean Mill. Two large double file Sly Dust Filters handling soy bean meal dust.

**SOY BEAN PLANT
SAVES \$400 PER DAY
Through DUST RECOVERY**

Because of the meal dust created in processing soy beans, this company* included Sly Dust Filters, as standard equipment five years ago, in its original layout.

The Sly Filters collect 5 1/2 tons of soy bean meal daily, at a value of upwards of \$400. Not only is the company highly pleased with these savings but also with the resulting cleanliness of its plant. Filter maintenance has been insignificant.

In crushing, shredding, pulverizing, loading, packaging, operations—in various process industries—dust is created. If valuable, the dust can be reclaimed profitably. Even if the dust has no value its collection pays off in cleaner plants, better working conditions and reduced costs.

Expertly designed and built, Sly Dust Filters offer many advantages in greater filtering capacity, easier bag replacement, automatic control, and other features which spell low cost operation.

MAY WE TELL YOU MORE ABOUT SLY FOR YOUR PARTICULAR APPLICATION?

*Name upon request.

THE W.W.

SLY

MANUFACTURING CO.

4754 TRAIN AVENUE • CLEVELAND 2, OHIO
New York • Chicago • Philadelphia • Syracuse • Detroit • Buffalo
Cincinnati • St. Louis • Minneapolis • Birmingham • Los Angeles • Toronto

When inquiring check CP 2484 on handy form, pgs. 2-3

ONE DROP OF WATER IS THE TARGET OF ENGINEERS AT SANTA FE TANK & TOWER COMPANY



To the engineer who designs a cooling tower, *one drop* of water is more than just "a drop in the bucket." He attaches a lot of importance to it . . . because his job is to concentrate on producing a maximum rate of *heat dissipation* from *each* drop of water that is to pass through the cooling tower. Multiplied many times, of course, the single drop of water effects the over-all efficiency of the tower.

The Santa Fe Tank & Tower Company, Los Angeles, has utilized a highly successful engineering formula for properly *balancing* each drop of water in relation to the exact ratio of air required to cool it. This formula has resulted in a high degree of operating *efficiency*.

The Santa Fe *pattern* for cooling tower design also includes a new method of deck design and deck spacing that exposes each *drop* of water to the air for a longer period of time without decreasing the free flow of air through the tower. This "prolonged" air-water contact has proven to be an important *efficiency* factor.



The cooling tower shown here is a 6 cell Mechanical Draft unit installed at an oil refinery where gasoline and petroleum by-products are processed. Additional information is available. Write to Santa Fe Tank & Tower Company, 5401 S. Boyle Ave., Los Angeles 58, California. Data is also available on Wood Pipe, Wood Tanks, Gas Scrubbers and other industrial wood specialties. Santa Fe maintains branch offices in all principal cities.

When inquiring check CP 2485 on handy form, pgs. 2-3

SAFETY

30 ft² of fire blanket weighs only 2 1/2 lb . . .

plastic coating protects against chemicals, heat, cold

Uses: To cut off oxygen and smother fires affecting personnel or equipment.

Features: Weighting only 2 1/2 lb, blanket provides over 30 sq ft of surface (76 x 60"). Plastic coating provides resistance to acids, alkalis, most solvents, and other chemicals. It stays flexible to temperatures below 0°F.

Description: Stasafe fire blanket is fabricated of glass cloth which is coated with a vinyl plastic (Geon-B. F. Goodrich Chemical Co.). The plastic gives a surface which is easily cleaned by flushing with water or wiping with a damp cloth.

Blanket is light grey colored with "Fire Blanket" printed on it in bright red for easy identification.

(Manufactured by Standard Safety Equipment Co., Dept. CP, 232 W. Ontario St., Chicago, Ill. . . . or for more information check CP 2486 on handy Reader Service slip, pages 2 and 3.)

Plastic head band on welding shield 'stead of fiber . . .

band is adjustable to fit both around and over head

Uses: Head shield to protect workers engaged in arc welding.

Features: Head band is made of plastic rather than the usual fiber. The plastic does not dry out and curl up as does fiber.

Description: Head shield proper is made of one-piece molded fiber construction. It has wide and deep clearance around the head to aid free circulation of air. The normal chin strap has been eliminated.

Adjustable stops on each side of the head band limit the drop of the helmet to any point desired by the welder. The stops prevent the shield from hitting the nose or chin when welding vertical or overhead. Shield takes the standard size 2 x 4-1/4" lens and glass.

(Manufactured by The Lincoln Electric Co., Dept. CP, 22801 St. Clair Ave., Cleveland 17, Ohio . . . or for more information check CP 2487 on handy form, pages 2 & 3.)

**NATIONAL
AIROIL
BURNERS**

FUEL OIL - GAS

**SERVING
INDUSTRY
FOR 41 YEARS**

- Steam Atomizing Oil Burners
- Mechanical Atomizing Oil Burners
- Low Air Pressure Oil Burners
- Rotary Oil Burners
- Industrial Gas Burners
- Combination Gas and Oil Burners
- Tandem Black Combustion Units
- Fuel Oil Pump Sets
- Refractory Burner and Muffle Blocks
- Valves, Strainers, Furnace Windows

Detailed information gladly sent you upon request.

Established
1912

Incorporated
1917

NATIONAL AIROIL BURNER CO., INC.

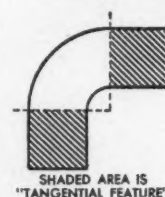
1300 EAST SEDGLEY AVE., PHILADELPHIA 34, PA.
Southwestern Division: 2512 SOUTH BOULEVARD, HOUSTON 6, TEXAS

When inquiring check CP 2488 on handy form, pgs. 2-3

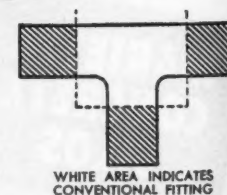
How the *Speedline* "TANGENTIAL FEATURE" cuts stainless piping costs

Now you can save up to 50% on corrosion-resistant lines by using light wall stainless pipe and versatile *Speedline* Fittings.

The added straight section of corrosion-resistant *Speedline* Fittings permits attaching unions or flanges without fouling . . .



SHADED AREA IS
"TANGENTIAL FEATURE"



WHITE AREA INDICATES
CONVENTIONAL FITTING

reduces number of welds required . . . simplifies installation . . . eliminates angle joints.

SEND FOR LATEST INFORMATION

Write a note on your company letterhead to get the complete story on the many cost-saving advantages of the *Speedline* System for process piping.

Speedline distributors are located in principal cities from coast to coast

HORACE T. POTTS CO. Since 1815

502 Erie Avenue, Philadelphia 34, Pa.

When inquiring check CP 2489 on handy form, pgs. 2-3

CHEMICAL PROCESSING

SAFETY

Produces more fine droplets and distributes them in even pattern . . .

deflector departs from previous sprinkler practice by directing no water at ceiling

Uses: Reportedly most effective against severe fires in fast-burning materials such as high-piled rubber tires, flammable liquids and materials with flash-fire characteristics.

Features: Produces a higher proportion of fine droplets and distributes them in a wide, evenly-filled pattern.

Description: Spray Sprinklers feature a deflector which departs from previous sprinkler practice by directing no water at the ceiling. Fast dissipation of heat is reportedly accomplished by more rapid evaporation of the finer droplets of the spray. It is also claimed that combustible material within the zone covered by each sprinkler is more quickly and more thoroughly wet down, imposing a barrier against the spread of fire.

(Spray Sprinklers are products of Grinnell Company, Inc., Dept. CP, 260 West Exchange St., Providence, R. I. . . . check CP 2490 on form, pages 2 and 3.)

Publish revised edition of chemical labeling guide

Issued recently was a revised edition of a guide to preparing labels for hazardous chemicals. The manual was written originally to provide standards of labeling for chemical manufacturers. This new 98-page edition sets forth principles of proper warning label preparation and includes illustrative labels for some 250 industrial and agricultural chemicals. It also covers labels for small packages and for samples and new products for investigational use.

Of the five states and territories which now have chemical labeling codes, four — California, Illinois, Oregon and Hawaii — essentially follow the recommendations in the manual. Most of the suggested labels present information beyond that required by Federal statutes. They are intended for use in addition to or in combination with any labels required by law.

To obtain "Manual L-1: Warning Labels" remit \$1 direct to Manufacturing Chemists' Assn., Inc., 246 Woodward Bldg., Washington 5, D. C. When inquiring specify CP 2491, pgs. 2 & 3.

No "dead-end" articles . . .

in fact every article leads into two avenues of contact. First, we do publish at the end of all articles the names and complete addresses of companies who can give you specific information so that you can write direct. Or, there's the handy Reader Service slip which you can check and send to us.

THE EDITORS



Handclasp of a friend-in-need

There's confidence in the very "feel" of the world famous C-O-TWO Squeeze-Grip Carbon Dioxide Type Fire Extinguishers. The quick-acting "Squeeze-Grip" fits your hand naturally like a handclasp . . . hangs right . . . carries right . . . works right. You're in complete command of the situation instantly . . . no fumbling . . . no fatigue.

From the non-conducting, shatterproof discharge horn to the high strength, durably finished cylinder, you get top quality construction that results in a lifetime of satisfactory service. Because of the very few working parts and corrosion resistant materials throughout, the total cost to you over the years is less than other initially lower priced makes . . . fire after fire, recharge after recharge, without trouble.

It's not hard to see, when you fully compare and try, why C-O-TWO Squeeze-Grip Carbon Dioxide Type Fire Extinguishers

are your best buy for killing flammable liquid and electrical fires, as well as some surface fires involving ordinary combustible materials. Sizes range all the way from 2½ to 100 pounds capacity . . . all fully approved by the Underwriters' Laboratories, Inc., Factory Mutual Laboratories, Armed Forces and Government Bureaus.

With C-O-TWO Squeeze-Grip Carbon Dioxide Type Fire Extinguishers the penetrating carbon dioxide is a clean, dry, non-damaging, non-conducting, inert gas . . . smothers fire instantly, leaves no after fire mess . . . harmless to equipment, materials and finishes . . . even food is still perfectly edible.

Act now for complete free information on these first-rate, sure-acting fire extinguishers. Remember fire doesn't wait . . . get the facts today!



MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

Squeeze-Grip Carbon Dioxide Type Fire Extinguishers
Dry Chemical Type Fire Extinguishers
Built-In High Pressure and Low Pressure Carbon Dioxide Type Fire Extinguishing Systems
Built-In Smoke and Heat Fire Detecting Systems

C-O-TWO FIRE EQUIPMENT COMPANY
NEWARK 1 • NEW JERSEY

C-O-TWO FIRE EQUIPMENT OF CANADA, LTD. • TORONTO 8 • ONTARIO

Sales and Service in the Principal Cities of United States and Canada

AFFILIATED WITH PYRENE MANUFACTURING COMPANY

When inquiring check CP 2492 on handy form, pgs. 2-3

It's new... it's
"NETONE"
 Filter Paper

- HIGH TENSILE STRENGTH
- HIGH BURST FACTOR
- ABRASION RESISTANT
- GREASE RESISTANT
- CHEMICAL RESISTANT

"NETONE" Filter Paper is a neoprene impregnated kraft paper that offers decided mechanical and chemical advantages over standard filter papers.

When compared to 60-pound unbleached kraft "NETONE" Filter Paper shows a 500% increase in wet tensile strength, wet burst factor increases from 6 to 57 and there is a marked increase in abrasion and crease resistance.

Write us about your requirements and we will be glad to send samples for your testing.

...And for your filter cloth requirements, we weave fabrics of VINCEL*, SARAN, DYNEL, NYLON, ORLON**, VINYON N†, and GLASS. Samples sent on request.

Solution	60-Pound Kraft	Wet Strength Resin	Neoprene Treated (3%)
H ₂ O	0	72 hr.	86 hr.
10% HCL	0	6 min.	4 hr.
10% NaOH	0	6 hr.	72 hr.

*TM —Nat'l Filter Media Corp.
 **TM —E. I. duPont de Nemours Co.
 †TM —Union Carbide & Carbon Corp.



Weavers of Industrial Filter Media for over Forty Years

The National Filter Media Corp.

General Offices & Mills: New Haven 14, Conn.
 Western Office & Factory: Salt Lake City 1, Utah

Sales Offices—Representatives

Chicago, Ill. Cincinnati, Ohio Houston, Texas Oslo, Norway Johannesburg, South Africa
 2627 West 19th St. Roselawn Center Bldg. 1406 Second National Bank Bldg. Nicolai Friis Edward L. Bateman

When inquiring check CP 2493 on handy form, pgs. 2-3

SAFETY

Provides instant aid spray dispenser for burns...

include topical anesthetic in first aid burn kit

Uses: Equipment of kits provides first aid for burns.

Features: Anesthetic is antiseptic, greaseless and kills pain almost instantly.

Description: Manufacturer's first aid burn kits now include an Aerosol automatic spray dispenser containing Amercaine. In addition to the spray dispenser, the standard large kit, Model 495, contains the anesthetic in the form of a water-soluble ointment. Both kits contain an assortment of bandages and compresses.

Carrying cases are of heavy gage steel with retractable hangers for wall mounting.

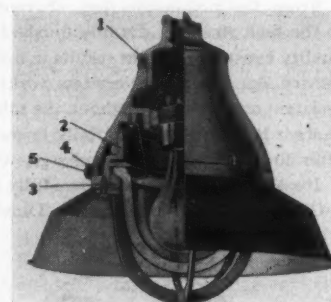
(Manufactured by Davis Emergency Equipment Co., Inc., Safety Division, Dept. CP, 45 Halleck St., Newark, N. J. . . . or for more information check CP 2494 on handy Reader Service slip between pages two and three.)

Better sealing on explosion proof fixture...

connections keep out liquids, vapors and dirt

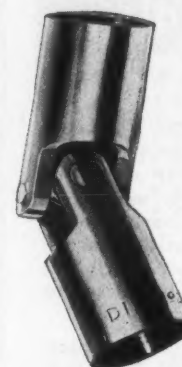
Uses: Fixture for use in hazardous atmospheres or locations.

Features: Improvement in threaded connections in order to



prevent liquids, vapors or dirt from entering bulb and receptacle areas. This was accomplished by three male threadings located at each of three points (see photo): (1) near the rim of the hood, (2) where hood and globe-holder are joined

6 GOOD REASONS FOR CHOOSING... **LOVEJOY**



UNIVERSAL JOINTS

- Concentricity guaranteed to .001.
- Rivets ground flush with body for close quarter work.
- Greater angle of operation with maximum bearing surface and strength.
- No binding, backlash or inplay of pins.
- Highest grade, heat-treated alloy steel.
- Exceed Armed Forces rigid requirements.

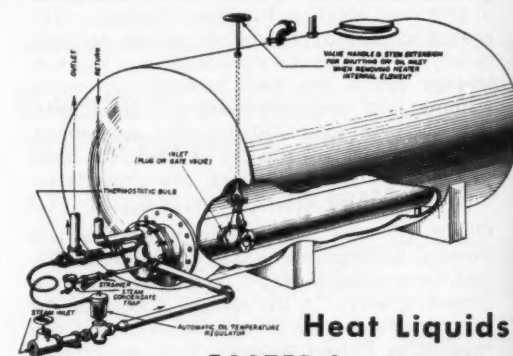
Available in 13 sizes. Diameters 1/2" to 4". Lengths 2" to 10 3/8".

WRITE FOR CATALOG TODAY

LOVEJOY FLEXIBLE COUPLING CO.

5072 W. Lake Street Chicago 44, Illinois
 Also Mfrs. Lovejoy Flexible Couplings and
 Lovejoy Variable Speed Transmissions

When inquiring check CP 2495 on handy form, pgs. 2-3



Heat Liquids FASTER for Pumping with HAUCK SUCTION HEATERS

1. Only the fluid actually needed is heated and maintained at proper pumping temperature.
2. Avoids delays and expense of heating entire tank contents.
3. Excess pumped liquid returned to heater inlet.
4. Large, straight cylindrical passageways minimize suction resistance for pumping.
5. May be installed through end, side or top of tank.
6. Automatic temperature regulation prevents over- or under-heating of fluid.
7. Available in steam and electric types.

Write for Catalogs 709 and 714

HAUCK MANUFACTURING CO.

Industrial Oil and Gas Burners and Equipment
 132-142 Tenth Street • Brooklyn 13, New York

When inquiring check CP 2496 on handy form, pgs. 2-3

CHEMICAL PROCESSING

VARNISH . . . and "Folded-and-Formed" Heating Elements

It is quite probable that, in the manufacture of your favorite varnish, part of the process requires equipment heated with "Folded-and-Formed" Electric Heating Elements . . . unequalled in efficiency, economy and adaptability. This is but one of hundreds of diversified "F-and-F" applications.



"Folded-and-Formed" Heating Elements are made in Standard and Custombuilt Racks which can be grouped to provide any desired K. W.

TRENT INC
Electrically Heated Industrial Equipment
235 LEVERINGTON AVE. PHILA. 27 PA.

What is your heating problem? "Folded-and-Formed" may offer the right solution.

When inquiring check CP 2497 on handy form, pgs. 2-3

for your benefit . . . and product protection

Waukesha
CONCENTRATES
ON
POSITIVE
DISPLACEMENT
SANITARY
PUMPS



There are many reasons why Waukesha makes P.D.* Sanitary Pumps exclusively — and they all work to your benefit, whether your product is liquid, semi-liquid, creamy or chunky. With Positive Displacement pumping, for instance, you eliminate the turbulence, churning, agitation and aeration so damaging to most products. For the Waukesha needs no "Buzz-Saw" speed to overcome high pressures or achieve volume production. Through its gentle, slow speed action, large open chambers, positive twin blade impeller delivery, your product comes out as perfect as it goes into the Waukesha, without damage or waste.

Write for details on the advantages of Waukesha Pumps in your plant.

WAUKESHA FOUNDRY CO.
WAUKESHA, WISCONSIN



When inquiring check CP 2498 on handy form, pgs. 2-3

SAFETY

together, and at (3) where globe retaining ring and cushioning gasket are seated against the globe.

Two of these threadings are inside the hood while the other is around the inside of the globe holder. Each male threading is seated securely against a corresponding female threading.

Description: Lighting fixture is one of manufacturer's EV Series. All types of reflectors are available on 100, 150, 200, 300 or 500-watt fixtures.

Notches in the hood and globe holder (4) enable the globe holder to be loosened easily with a screw driver, even after it has been exposed to dirt-laden air or corrosive vapors for a prolonged period of time. Additionally, a large knurled thumb screw (5) sets between these notches to lock the holder in place.

(Introduced by Crouse-Hinds Co., Dept. CP, 1347 Wolf St., Syracuse 1, N. Y. . . or for more information check CP 2499 on handy form, pages 2 and 3.)

Plastic compound adds to wet-grip qualities . . .

also imparts leathery feel and look to work glove

Uses: Handling acids, caustics, solvents and particularly recommended for handling jobs in contact with oil or other liquid-coated materials.

Features: Plastic coating is stated to impart very good wet-grip qualities to glove and to increase wearing qualities. It also reportedly gives a coating which looks and feels like leather.

Description: Grappler line of gloves is coated with a reinforced plastic compound called Durox.

Four styles are available — a 12" fully coated gauntlet, fully coated knitwrist, palm coated knitwrist, and palm coated safety cuff. The fully coated styles are made on the curved-finger, wing-thumb pattern with preflexed finger joints.

(Introduced by Edmont Manufacturing Co., Dept. CP, 1204 Walnut St., Coshocton, Ohio . . . or for more information check CP 2500 on convenient Reader Service slip between pages 2 and 3.)

It's MORE than fire safety, SIR . . .



....it's ENGINEERED "Automatic" fire protection

When it comes to the planning of fire protection for your plant or business, there's considerably more to be viewed than the price. Of course, you will want to be fully informed on the economics of protecting your property, but it's equally important to know that the method of protection is the best available for any given area of your building.

It is for that reason that through the years we have not limited ourselves to the design and installation of only certain types of protection. Like you, we study the economic factors involved. Then, following a thorough investigation of all elements of your overall fire safety problem, we design, manufacture and install the type of protection *best by test* for maximum safety. It's engineered "Automatic" FIRE PROTECTION for you . . . the finest available at any price!

Why not find out how engineered "Automatic" FIRE PROTECTION can save dollars for your business whether you ever have a fire or not. Remember, what's worth insuring is worth protecting.

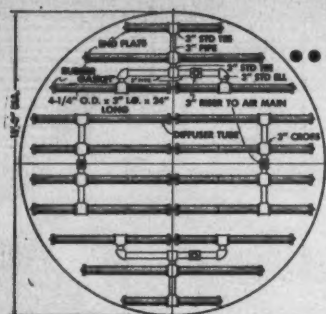
Write for Bulletin 66, the ABC of Fire Protection. It's FREE.

**"Automatic"
Sprinkler**
CORPORATION OF AMERICA
YOUNGSTOWN, OHIO
Offices in principal cities of
North and South America

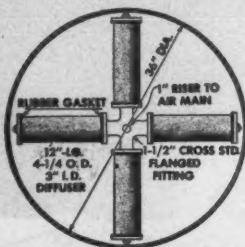
When inquiring check CP 2501 on handy form, pgs. 2-3

FOR BETTER GAS-BUBBLE DIFFUSION

...in fermentation and chemical processes



Typical grid of diffuser tubes for circular tank.



Typical small sparger assembly.

In practically any gas diffusion process (from dissolving volatiles with steam bubbles, to growing bacteria in oxygen bubbles) you'll get optimum diffusion and absorption by using ALOXITE aluminum oxide porous plates or tubes.

The highly uniform grain structure of ALOXITE material means you always get uniform, small bubble diffusion. And the glass-like ceramic bond which coats each grain presents a smooth, low-resistance surface that minimizes pressure loss or clogging.

ALOXITE diffusers are also inherently resistant to corrosion and can be safely used at working temperatures as high as 900°C. They are rugged enough to withstand repeated handlings. Various shapes are available for use in a wide range of equipment design.

FREE BOOKLET. May we send you our popular booklet on porous media? Its 56 pages cover all fields of filtration and diffusion. It gives pointers on specifying materials; outlines how to install, operate and maintain various units. Complete with photos, charts, etc. Address Dept. **S-73**, Refractories Div., The Carborundum Co., Perth Amboy, N. J.



Use porous diffusers by **CARBORUNDUM**

Trade Mark

"Carborundum" and "Aloxite" are registered trademarks which indicate manufacture by The Carborundum Company. When inquiring check CP 2502 on handy form, pgs. 2-3

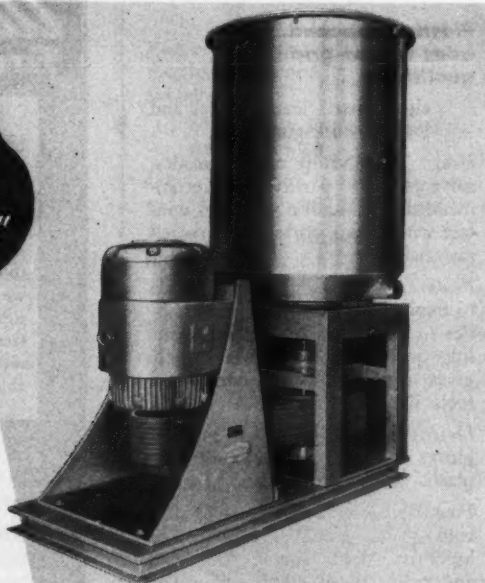
"Gives Us an Emulsion
of Very Fine and Uniform
Particle Size without Homogenizing"

That's the comment of a large pharmaceutical company on the results they are getting with

ABBÉ DISPERSALL MIXERS

It points up the job that this Mixer does in breaking up and dispersing liquid globules, and agglomerations of solids in addition to much faster and more thorough mixing.

If you are interested in the probability of making your mixing operations a ONE stage process, write for a copy of Bulletin 68.



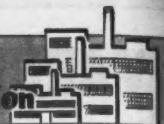
The mix is pulled down through the rapidly rotating milling element with the cupped rotor-stator. Here impact and shear break up agglomerations of solids and liquid globules to speed up the dispersion of the mix.

ABBÉ ENGINEERING CO. • 46 CHURCH STREET, NEW YORK 7, N. Y.

Makers of
ABBÉ ENGINEERING Ball, Pebble and Jar Mills

When inquiring check CP 2503 on handy form, pgs. 2-3

Expanding Chemical Production



New Kentucky calcium carbide plant output will be doubled

Capacity of the new Air Reduction Company's calcium carbide plant at Calvert City, Ky. will be doubled from its rated capacity of 142,500 tons annually. The additional capacity from the original plant now nearing completion is expected to be available early in 1954.

Catalyst unit for 16,000 bpd output slated by Sinclair

A catalytic reforming unit with a charging capacity of 16,000 bpd and capable of producing higher octane gasolines is part of a \$14 million expansion by the Sinclair Refining Company.

The new unit, to be built at Marcus Hook, Pa., is expected to be completed in the summer of 1954.

Largest glass plant in southeast will have Georgia site

Owens-Illinois Glass Co., Toledo, Ohio is planning construction of the largest glass plant in the Southeast to be located at Atlanta, Ga. on an 80 acre tract. The factory will be equipped to make every variety of glass container, the company reports. No date has been set for construction, although a warehouse is now being built.

Nitric acid output will get boost of 110 tons daily

Construction of facilities to increase present nitric acid capacity by 110 tons daily is expected to be completed late this year at Cactus plant, Etter, Texas, for the Phillips Petroleum Company.

Argentine refinery for 28,300 bpd is 75 per cent completed

Work has reached the 75 per cent completion point on a 28,300 bpd catalytic refinery in the Argentine. The new plant is being erected for Yacimientos Petroliferos Fiscales at Eva Peron (formerly La Plata) and will be called the Presidente Peron Refinery.

Polyester fibers output gets boost from new \$40 million unit

Production has begun at the DuPont Company's \$40 million plant (located in Kinston, N. C.) for the manufacture of "Dacron" polyester fiber.

The new source, the first of six similar production units planned by the company, is built on a 635-acre tract along the Neuse River and will make the new fiber as staple, tow, and continuous filament. In addition to the plant, a new research laboratory for the product is being built at the same location and is expected to be completed in 1954.

The five additional production units are expected to be in operation by the end of this year. Production goal is an annual capacity of 35,000,000 lb of staple and continuous filament "Dacron" fiber.

Agricultural chemicals unit gets midwest location

Niagara Chemical Div. of Food Machinery and Chemical Corp. has purchased property at Wyoming, Ill. to establish midwestern facilities for production of agricultural chemicals. The property, formerly known as the Government Hemp Plant, consists of 46 acres containing buildings with 32,000 sq ft floor space.

New ammonia-producing plant is nearing completion

A new ammonia plant for the Shell Chemical Corp. at Ventura, Calif. is expected to be completed late this summer and when finished will have a daily output of more than 150 tons of anhydrous ammonia.

Adhesive, paints manufacturing unit makes comeback from explosion

As an added move to offset production interruptions resulting from a recent explosion in one of their plants, American Polymer Corp. of Peabody, Mass., is now building a new, modern unit for manufacture of products used in the adhesive, paint, textiles, paper, agricultural and other fields.

The new unit is scheduled for completion in early autumn and will enlarge the firm's output of polymers and co-polymers. Pending completion, the company is making deliveries from existing facilities.

\$5.5 million goes into two plants for rubber chemicals output

Goodyear Tire & Rubber Company, Akron, Ohio this year will invest approximately \$5.5 million in expansions of chemical production facilities at the firm's Akron plant and at Niagara Falls, N.Y.

In Akron, an addition to the Chemigum plant will cost approximately \$1.5 million. The new Niagara Falls plant will cost approximately \$4 million and will include four new factory units on a 10-acre site.

Ground has been broken for the Akron plant addition. Construction work on the Niagara Falls facilities is expected to get underway this summer.



Cast to Last...against salt water, sand and sewage

At Consolidated Edison's East River Station, they used to replace shaft sleeves in the circulating pumps within 2½ years and often sooner.

There the East River water is both salty and sandy. Sewage and the sandy washoff from streets after a rain are carried by two sewer trunks that empty into the river within 300 feet of the pump intake. Abrasion and corrosion combine to attack the sleeves, as salt water is used in the gland seals.

Finally, the engineers decided to try Inco-Cast "S"® Monel sleeves. These sleeves have already withstood this abrasive and corrosive attack for over four years!

And the way Inco centrifugally cast this hard, corrosion-resisting alloy into the sleeves is a story in itself.

First, Inco designed a carbon insert to be placed inside a regular centrifugal mold. This was so a sleeve could be cast with three varying outside diameters and a constant inside diameter. The job was successful. It saved on metal and also cut the amount of machining needed to finish a sleeve.

Just as Con Edison discovered, Inco-Cast sand or centrifugal castings may be a practical solution to some problem in your plant. Take a look at what you get when you purchase Inco castings.

1. Castings that frequently outlast other materials under destructive service conditions. That's because they are made of Inco Nickel Alloys, especially developed to withstand corrosion, abrasion, erosion and galling.

2. Castings in any practical shape or size you need. Inco has specialized in castings for over 47 years and is equipped to make your castings whether they weigh a few ounces or tons.

3. High quality castings because they are made to meet or exceed Government specifications for these high Nickel Alloys.

4. The benefit of Inco's help in solving your metal problems based on wide experience in field and laboratory testing of Nickel Alloys.

5. Inco Nickel Alloy castings made at Inco's own foundry; your assurance of sound, dependable castings.

6. Even castings you previously thought impractical to produce in Monel®, Nickel or Inconel® can often be cast by Inco.

Do you need a casting that can stand up against corrosion, wear and other destructive service conditions? Let Inco's casting specialists study your problem. We may be able to suggest a practical solution. If so, we will also furnish you with cost and delivery information on any N.P.A. rated order.

In the meantime, write for your copy of "When it's a question of castings..."



THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

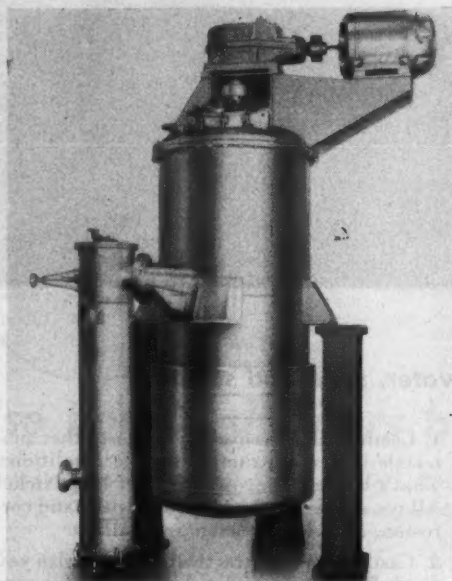
Inco Castings

SAND, CENTRIFUGAL, PRECISION

When inquiring check CP 2504 on handy form, pgs. 2-3

BUFLOVAK

can help you solve
processing problems —
at a PROFIT



A special BUFLOVAK Evaporator-Still which combines two processes into one.

BUFLOVAK has helped another nationally-known manufacturer produce a better product at lower cost by combining two processes into one. That, of course, means greater profits!

A valuable, dilute, heat-sensitive solution is carried to high concentration in a single, compact unit. Ordinarily a two stage process would be required.

Special equipment was engineered for the job. A low-temperature, sanitary evaporator steam-chest and a high vacuum processing kettle equipped with an agitator and selectable heating surfaces, were combined into a single, integral unit.

Through the combined facilities of our Research and Testing Laboratories, coupled with extensive field experience, BUFLOVAK Engineers design processing equipment for the most profitable results.

BUFLOVAK Catalogs have a wealth of valuable information on drying, evaporation and processing. A request on your company letterhead will bring copies to you.

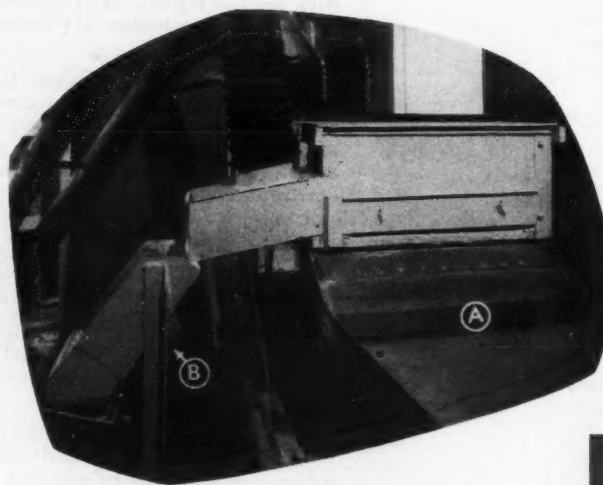
BLAW-KNOX COMPANY

BUFLOVAK EQUIPMENT DIVISION
1645 Fillmore Ave. Buffalo 11, N.Y.

processing
equipment

Victor Chemical Protects Product Purity with Permanent Magnets

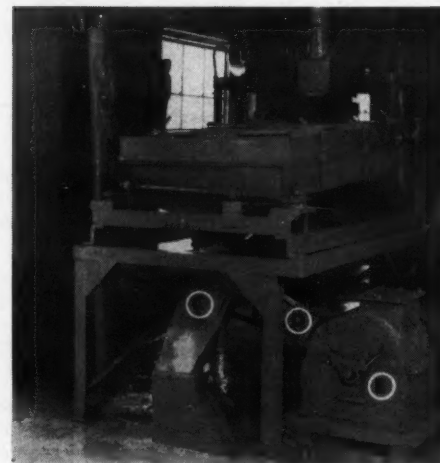
Fifteen separators used in plant, requiring practically no maintenance and having long life, also prevent damage to equipment from tramp iron



They employ the metal, Alnico V, the strongest magnetic material known. Strength of the magnets was demonstrated at the plant by a production supervisor who placed a steel shovel a few inches from the surface of one of the units. It nearly pulled the shovel out of his hands.

Fig 1—Magnetic separators used with shaker screen to maintain the purity of the phosphates being manufactured, are shown at (A) and (B)

Fig 2—Of the permanent magnets appearing here at (C) and (D), the one at (D) performs a two-fold function of maintaining product purity and preventing damage to equipment



PROBLEM: The Chicago Heights plant of Victor Chemical Works, in their program of maintaining product purity, desired an improved method for preventing contamination by tramp iron. The plant is engaged in the manufacture of phosphates. Procedures that had been used in the past, such as electromagnetic pulleys, were not entirely satisfactory. In addition, the company wished to eliminate any possibility of damage to equipment, such as pulverizers, from iron particles.

Solution: Starting five years ago, permanent magnetic separators were placed in a number of locations around processing equipment. At present, approximately 15 are being used in the plant. These magnets require no electrical hookup and have no moving parts.

An example of the use of the magnetic separators at a shaker screen is shown in the accompanying Fig 1. At (A) in photograph, a 28" long separator is in position beneath the screen discharge, with the magnet's face flush with the surface of the apron. As the screened particles pass across the magnet, any tramp iron present in the material is removed. The lower portion of a second magnet being used in a similar way in conjunction with the shaker appears at (B). This latter unit is shorter than the other separator, being only 10" in length.

Fig 2 illustrates the application of two other 10" magnets in another section of the plant, also on a shaker screen. At (C) a separator is installed in a chute through which the screened phosphates pass. Another separator is in chute at (D). This magnet performs a two-fold function — protecting the purity of the product, and preventing damage to the Prater pulverizer at (E).

Results: The magnetic separators in use at the plant have been doing a good job of maintaining product purity and preventing damage to equipment. Practically no maintenance has been required on the units. Life of the magnets is permanent, according to manufacturer. Those that have been in operation for as long as five years are still satisfactory. Although a cleaning step is necessary for removal of tramp iron, this can be easily accomplished, according to plant supervisors.

(Magnetic Separators in use at Victor Chemical Works are a product of Eriez Mfg. Co., Dept. CP, 1945 Grove Dr., Erie 6, Pa. . . or for more information check CP 2506 on handy form, pages 2 and 3.)

Foreign rights issued on filtration-extraction

Certain foreign rights have recently been granted covering issuance of licenses and supply of solvent extraction plants utilizing the filtration-extraction process developed at Southern Regional Research Laboratories. Foreign patent applications are being filed to cover use of the process for all vegetable oil bearing materials.

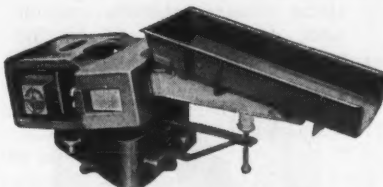
(Firm getting rights, and also holding license covering use of process in the US for cottonseed, is Wurster & Sanger, Inc., Dept. CP, 5201 S. Kenwood Ave., Chicago 15, Ill.)

Pictures and describes filters and asbestos filter sheets

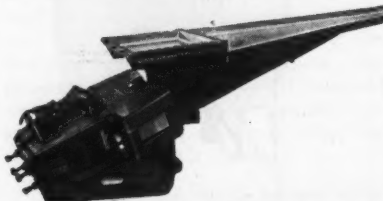
Two-page bulletin shows two filter presses, one positive-seal disc filter, and asbestos filter sheets. "Finer Filtration for Better Products with Ertel Filters and Filter Sheets" is issued by Ertel Engineering Corporation, Dept. CP, Kingston, N. Y. When inquiring specify CP 2507 on handy form, pages 2 and 3.



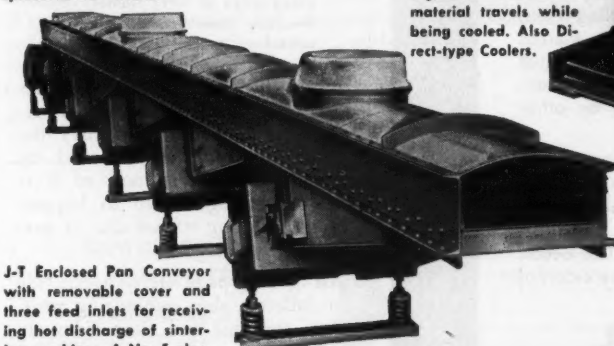
No. 1-B electric vibrating Feeder—for small-capacity operations up to 3500 pounds per hour. Ideal for laboratory use.



Jeffrey-Traylor No. 3 electric vibrating spark-proof Feeder with 12" x 30" open-pan deck. For feeding operations in hazardous atmospheres or under extreme moisture conditions.



Jeffrey-Traylor electric vibrating Spreader Feeder, 14" wide x 70" long with one edge tapered to spread to 55" width.



J-T Enclosed Pan Conveyor with removable cover and three feed inlets for receiving hot discharge of sintering machines. A No. 5 electric vibrating type, 25" wide x 45' long.

VIBRATING EQUIPMENT

**FEEDERS
DRYERS
PACKERS**

**COOLERS
CONVEYORS
SCREENS**

A type and size to meet requirements in continuous processing—at low over-all cost.

Absolute control over flow of wide variety of materials.

ULTIMATE IN FLEXIBILITY!

Literature Available

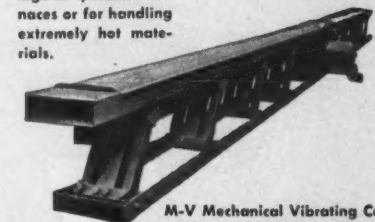
Right: Jeffrey-Traylor electric vibrating Indirect-type Cooler. Type HI-21F open type 21" wide and 18' long. Has solid plate conveying surface over which material travels while being cooled. Also Direct-type Coolers.



Below: Jeffrey-Traylor Type 450 WAY-TROL, a precision machine for continuous gravimetric feeding, batching and proportioning. The feeder is weight-controlled, delivery of material being automatically regulated. Accurate and flexible.



Jeffrey-Traylor No. 4-L Water-cooled Feeder with 10" outside diameter x 4' long water-jacketed deck. For feeding to high temperature furnaces or for handling extremely hot materials.



M-V Mechanical Vibrating Conveyor for conveying abrasive, lumpy or rough materials, hot or cold, dry or wet, as well as fine materials. Up to 80' can be operated by one drive unit.

JEFFREY-TRAYLOR DIVISION

CAPACITIES—FROM A FEW OUNCES TO TWO THOUSAND TONS PER HOUR



THE JEFFREY

ESTABLISHED 1871
MANUFACTURING CO.

Columbus 16, Ohio

sales offices and distributors
in principal cities

PLANTS IN CANADA, ENGLAND, SOUTH AFRICA

IF IT'S MINED, PROCESSED OR MOVED
...IT'S A JOB FOR JEFFREY!

When inquiring check CP 2508 on handy form, pgs. 2-3

CONTINUOUS SEPARATION

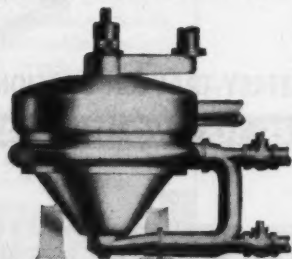
OF LIQUIDS AND SUSPENDED SOLIDS



The Merco Separator brings the modern, continuous flowplan to new phases of the chemical industry. It replaces bulky, batch-type operations, eliminating inherent slowness, contamination and fluctuations.

Versatile Merco Separators are economical replacements for conventional settling tanks, filters and centrifuges. In addition, Mercos handle micro-classification and washing of extremely fine particles—functions that cannot be economically duplicated by other means.

Merco continuous separation is based on a unique return flow principle. Clarified liquids and concentrated solids are separated and discharged without clogging, buildups, surges or retention of material. The action is entirely enclosed. All controls are external and simple.



Write today for descriptive bulletin C35 and application data.

MERCO CENTRIFUGAL CO.

AFFILIATE OF THE MERRILL COMPANY ENGINEERS
1735 GREEN STREET • SAN FRANCISCO • CALIFORNIA

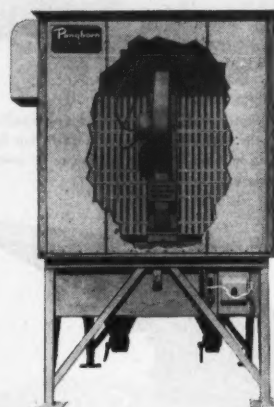
When inquiring check CP 2509 on handy form, pgs. 2-3

PROCESSING

Reverse-air manifold cleans collector cloths

Uses: Dust collection.

Features: Continuous cleaning of cloth filters, while unit is operating, eliminates need to shut down for periodic cleaning. Resistance to air flow through the cloths remains relatively constant since dust accumulation on the surfaces is not allowed to build up



Reverse-air cleaning manifold travels slowly back and forth along edge of filter frames, continuously cleaning cloths as dust collector keeps on operating

appreciably. Design minimizes chance of re-entraining and re-depositing (on other cloths) the dust that is being removed by cleaning operation; most of it is assured passage down to hopper. Short-circuiting of air also is prevented by design.

All moving parts are on clean side of collector, thus minimizing wear. Both the dust and clean sides are accessible for inspection.

Description: Operational principle of the Type CH-3 collector is shown in illustrations. Continuous cleaning is accomplished by action of a manifold that travels from side to side and includes an integral reverse-air blower which takes its air directly from clean side of the collector. Manifold face is covered with a flexible diaphragm which has a row of orifice openings down its center line through which the reverse air enters the inside of the filter frames. Since the diaphragm spans three vertical rows of frames, it blocks off all air flow through the frame on either side of the one being cleaned.



For FILTERING & FILLING

small plant or batch lots of
**PHARMACEUTICALS,
COSMETICS,
CHEMICALS,
SOAPS, Etc.**

Two Ertel units that make small production efficient. They have all the desirable features of Ertel high production equipment: EFS-B FILTER has single hand wheel for simple trouble-free operation, bronze or stainless circulatory system, accommodates accepted Ertel Asbestos Filter Sheets. PORTABLE FILLER has automatic overflow system, non-drip spouts, bottle size flexibility up to gallons. And, both units can be easily moved from place to place. Write for detailed information on this important equipment... it belongs in your plant.

ERTEL ENGINEERING CORPORATION

KINGSTON 3, NEW YORK
Branch Office & Showroom Located in New York City

COMPLETE LINE OF
Liquid Handling Equipment



When inquiring check CP 2510 on handy form, pgs. 2-3

VARIABLE PARTICLE SIZE DISTRIBUTION



WITH THE NEW



JET PULVERIZER

- Fast continuous production
- Low maintenance

WRITE
...for the new technical bulletin on Majac Jet Pulverizers





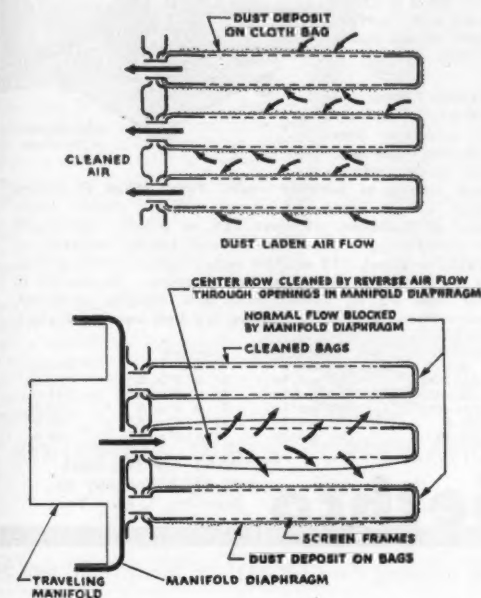
Engineering Company
189 FREEPORT ROAD
BLAWNOX (PITTSBURGH DISTRICT) PENNA.

When inquiring check CP 2511 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

The traveling manifold is operated slowly backward and forward by a reducer and fractional hp motor, controlled by limit switch and magnetic reversing starter.

Collector is furnished in six-screen-high construction as standard, except for small air volume problems



Normal flow of air through filter bags is indicated by top drawing. Bottom drawing shows what happens during cleaning operation

for which four- or five-screen-high, 5' long screen sections will suffice. Screen frames are steel wire mesh, electrically grounded.

Existing installations of manufacturer's CH collectors can be converted to the self-cleaning Type CH-3.

(Product of Pangborn Corporation, Dept. CP, 286 Pangborn Blvd., Hagerstown, Md. . . or reader may secure additional information about this product by simply checking CP 2512 on convenient Reader Service slip between pages two and three.)

Bulletin tells what to use for making resins

Plants and equipment for making varnishes, resins and molding powders are described in 24-page bulletin. Full use is made of photos and drawings to show the various types of units and the different methods of heating and cooling which may be used with them. A section goes into materials of construction, instrumentation, and agitation. Pilot plant for development work is shown.

Bul 2414 is issued by Process Equipment Department, Blaw-Knox Company, Dept. CP, Farmers Bank Bldg., Pittsburgh 22, Pa. When inquiring specify CP 2513 on handy form, pages 2 and 3.

Technical data on the revolutionary new

holo-flite^{*}

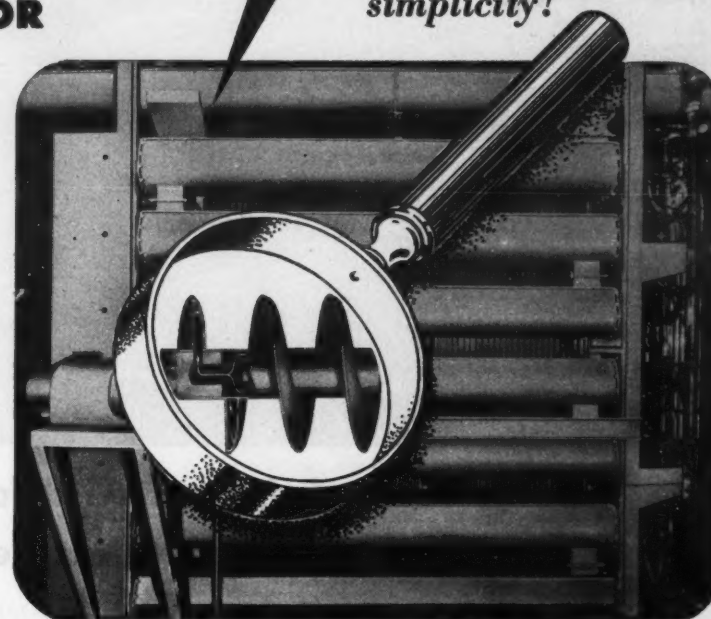
(HOLLOW-FLIGHT)
PROCESSOR

If you have processing operations where slurries, solids, pulps or pastes must be cooled or cooked, be sure to investigate the many unique advantages of the newly-developed HOLO-FLITE Processor before you install any heat-exchange equipment.

Here's the HOLO-FLITE principle . . .

Two or more screw conveyors rotate slowly in a trough. The blades and shaft of each flight of conveyors are hollow, with provision for circulating the heat-transfer agent through them. The product to be cooled or cooked is moved along the trough, being constantly rotated into, around, over and under the conveyor screws as it moves.

Thus, a continuous thermal transfer takes place between the product and the heat-transfer fluid circulating in the blades. The product is cooled or cooked in *continuous-flow* without the "stop-and-go" losses of batching operations . . . and cooled products can be packaged directly from the HOLO-FLITE discharge—saving space, time and additional handling.



THIS 6-TIER HOLO-FLITE cools 7 tons of cottonseed press cake per hour from 285° to 89°F. in a total floor space of only 28 sq. ft.
(Inset) Enlarged cutaway view of HOLO-FLITE screw showing heat-transfer principle.

Here are typical HOLO-FLITE advantages

The HOLO-FLITE principle is so unique it is setting completely new standards of performance in many ways. For example . . .

*Reg. T.M.

The HOLO-FLITE Saves Space
—It requires as little as 1/5th the space of other units of comparable capacity because (1) it has far greater heat-transfer area per cubic foot of space . . . and (2) the flights can be "tiered" as high as desired to give maximum capacity in very small floor areas.

The HOLO-FLITE is Versatile
—Processed product can be fluid, pulp or paste—granular, crys-

talline or powdered solid. Heat-transfer fluid can be refrigerant, cooled or ambient water, steam, oil or any other desired fluid, at any normal temperature range.

The HOLO-FLITE is Dust-Free
—Its gentle action provides large heat-transfer action without dust and with negligible particle abrasion. Simplifies installations, assures higher quality product.

The HOLO-FLITE is Adaptable
—It can easily be designed to handle virtually any capacity by (a) varying the diameter of the screws (7" to 16") . . . (b) varying the length of the screws (8 ft. to 20 ft.) . . . (c) varying the number of intermeshing screws per trough (2, 4, or 6) . . . and (d) varying the number of tiers stacked on top of one another (1 to 10, or more).

The HOLO-FLITE is in daily operation on such typical products as sand, cement, cottonseed cake, soybean meal, borax, salt, sugar, baby foods and many other equally-varied products.

What is your problem? Our engineers will be glad to assist you in making the most of HOLO-FLITE advantages. Write wire, or phone the office nearest you!

Want More Facts? This 8 page booklet describing the HOLO-FLITE in greater detail will gladly be sent on request. No obligation, of course.



WESTERN

Precipitation

CORPORATION

ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

Main Offices: 1023 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA
CHRYSLER BLDG., NEW YORK 17 • 1 N. LA SALLE ST. BLDG., CHICAGO 2
1429 PEACHTREE ST. N.E., ATLANTA 5 • HOBART BLDG., SAN FRANCISCO 4
PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

When inquiring check CP 2514 on handy form, pgs. 2-3



Stores Sulphuric Acid for Plant Food Manufacturer



Growing corn, wheat, barley, and other crops deplete the soil of certain vital ingredients. To keep producing large-yield crops it is necessary to replenish these "vitamins" in the soil.

The Smith-Douglass Company's plant at Streator, Illinois produces all types of commercial fertilizers, potassium silicofluoride, and sulphuric acid. The sulphuric acid — used for the manufacture of superphosphate, one of the main ingredients in commercial fertilizers — is stored in the 320,000-gallon Horton tank shown above. Some of the acid handled through the tank is made at the Smith-Douglass plant in Streator and the rest is purchased from other chemical suppliers.

Chicago Bridge & Iron Company is equipped to design, fabricate and erect tanks of carbon steel or stainless steel, carbon steel clad with corrosion-resistant materials or carbon steel lined with corrosion-resistant materials. When planning steel plate installations, write our nearest office for information or quotations. There is no obligation on your part.

CHICAGO BRIDGE & IRON COMPANY

Atlanta 3 2107 Healey Bldg.
Birmingham 1 1533 North Fifth St.
Boston 10 1007—201 Devonshire St.
Chicago 4 2116 McCormick Bldg.
Cleveland 13 2212 Midland Bldg.
Detroit 26 1535 Lafayette Bldg.
Houston 2 2151 C & I Life Bldg.

Los Angeles 17 1536 General Petroleum Bldg.
New York 6 3314—165 Broadway Bldg.
Philadelphia 3 1630—1700 Walnut St. Bldg.
Pittsburgh 19 3208 Alcoa Bldg.
San Francisco 4 1545—200 Bush St.
Seattle 1 1307 Henry Bldg.
Tulsa 3 1649 Hunt Bldg.

Plants in: BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PA.

When inquiring check CP 2515 on handy form, pgs. 2-3

PROCESSING

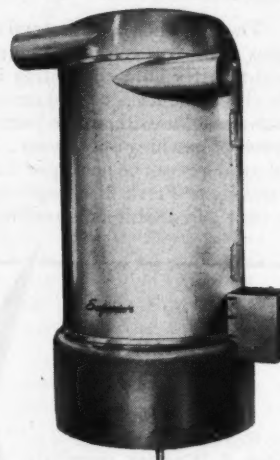
Collector 99.9% efficient on air loaded with micron dust . . .

self-cleaning unit holds efficiency under varied conditions

Uses: Continuous removal and recovery of fine particles (down to 3 microns) from air and gas. Can be used conveniently in connection with mills and pulverizers, blenders, dryers, other fines-evolving equipment and processes.

Features: Clean, simple design uses only one moving part and is self-cleaning. High efficiency (99.9 + %) is relatively constant over wide range of temperature and humidity conditions, and dust loadings. Has been production-tested in various industries, ranging from food to pharmaceuticals and from abrasives to fertilizers.

Description: The Superior Air Centrifuge uses a perforated, tapered, vertical cylindrical rotor inside a housing to generate a high rotational speed of the gas or air, without inducing much turbulence.



Production model of dust collector may be installed next to dust source, and the cleaned air discharged right inside the plant

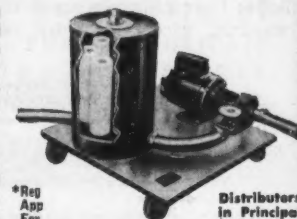
Dust-laden air enters the housing tangentially at pipe opening toward right in photo, and is accelerated by the rotation of the perforated rotor. Most of the solid material separates from the air in the space between the housing and the tapered rotor. These solids drop to the bottom of the housing and are swept by the cleanout disc to solids outlet, a vertical rotary air-lock constructed as an integral part of the machine.

FILTER YOUR SOLUTIONS

50-1500 GAL/HR

SETHCO
FILTER
PUMP
ASI-600

SERVICE: Filters practically any acid or alkaline solution from pH 0 to pH 14; removes particles down to one micron in size.



DESIGN: Filter Assembly fabricated of stainless steel 316, high temperature lucite, rubber-lined, Havg or Sethrin* resin.

Filter tubes of cotton, dynel, porous stone, or porous carbon. Pumps fabricated of Hastelloy, stainless 316, or plastic; centrifugal or self-priming. Motors drip-proof, totally enclosed, or explosion-proof, 110 or 220 volt, single or three-phase, 50 or 60 cycle, sleeve or ball bearing. Hose—12 ft. inlet and 12 ft. outlet, acid and alkaline resistant. Base—Phenolic base on rubber tire ball bearing casters.

Model	Rated Capacity	Overall Size	Weight
ASI-300	300 gal/hr	2' x 2' x 2'	125 lb
ASI-400	400 gal/hr	2' x 2' x 2'	135 lb
ASI-600	600 gal/hr	2' x 2' x 2'	150 lb
LSI-5	50 gal/hr	11" x 14" x 12"	30 lb
LSI-10	100 gal/hr	12" x 16" x 16"	40 lb

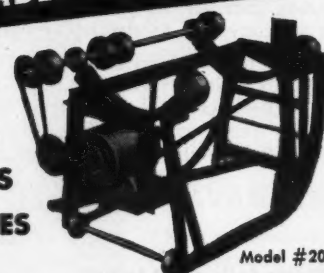
Write for Literature
72-76 Willoughby St.,
Brooklyn 1, New York

Sethco

When inquiring check CP 2516 on handy form, pgs. 2-3

MORSE PORTABLE ROTATOR

- MIXES
- CLEANS
- TUMBLES



Model #200

A retractable caster frame offers simpler handling of containers with the Morse Rotator. Two Neoprene Drive Wheels prevent creeping. Four drive wheels give positive driving action and two idler wheels with Torrington Needle Bearings make the Morse Rotator a smoothly operating unit. Tipping lever included with each Rotator. Write for free folder showing complete Morse line.

Less motor and drive—Wt. 75 lbs. \$147.75
Complete with motor—Wt. 155 lbs. \$228.25

MORSE MANUFACTURING CO., INC.
757 West Manlius St. East Syracuse, N. Y.

When inquiring check CP 2517 on handy form, pgs. 2-3

CHEMICAL PROCESSING

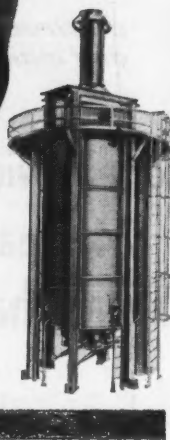
- ★ For Direct Heating of Liquids and Vapors
- ★ Indirect Heating Systems Using Circulating Medium

Struthers Wells FIRED HEATERS for the Process Industries

Struthers Wells direct fired heaters are available in sizes from 100,000 to 25,000,000 BTU per hour, for heating gasoline, oils or asphalts, superheating steam or gas, and for indirect heating systems.

Struthers Wells indirect heating systems give economical—trouble-free operation at temperatures to 750° F., or above.

If your process requires temperatures above those of existing steam supply—if steam is not available, or if the process can be improved by higher temperatures, investigate this simple and economical equipment.



Struthers Wells

STRUTHERS WELLS CORPORATION Warren, Pa.

PLANTS AT WARREN, PA. • TITUSVILLE, PA.
Offices in Principal Cities

When inquiring check CP 2518 on handy form, pgs. 2-3

SMOOTH—VIBRATIONLESS PROPELLERS

for MIXING, STIRRING AERATING, PUMPING, etc.

Manufactured by an exclusive process, MICHIGAN propellers are perfectly balanced to avoid whip and strain on shafts. And because of their superior functioning are now standard parts of the products of many leading equipment manufacturers.

Available for special application and replacement, as well as original equipment, in a wide variety of metals and in sizes up to 60". Write for latest data folder.



Side Entering Mixer by
EASTERN INDUSTRIES
NEW HAVEN, CONN.

MICHIGAN WHEEL CO.
GRAND RAPIDS 3, MICH.

When inquiring check CP 2519 on handy form, pgs. 2-3

PROCESSING

When the air (containing the rest of the fines) gets up to the angular velocity of the rotor it passes through the perforations into the inside of the tapered cylinder. A system blower draws it upward toward the clean air outlet tube, but in doing so it creates a funnel-shaped vortex which increases the angular velocity of the air still more, but without turbulence.

The fine particles are separated from the air because of the high centrifugal force and pass out again through the rotor perforations to the space between rotor and housing. From here they are removed along with the heavier particles initially thrown off. Clean air moves through outlet tube into bonnet from which it is discharged through pipe shown at top left of machine in photo.

Standard steel machine is just over 7' high and is 42" diam. A small portable machine is also available for lab work and production analysis, or where small amounts of air are handled in commercial production. This smaller unit is made of chrome and transparent Plexiglas.

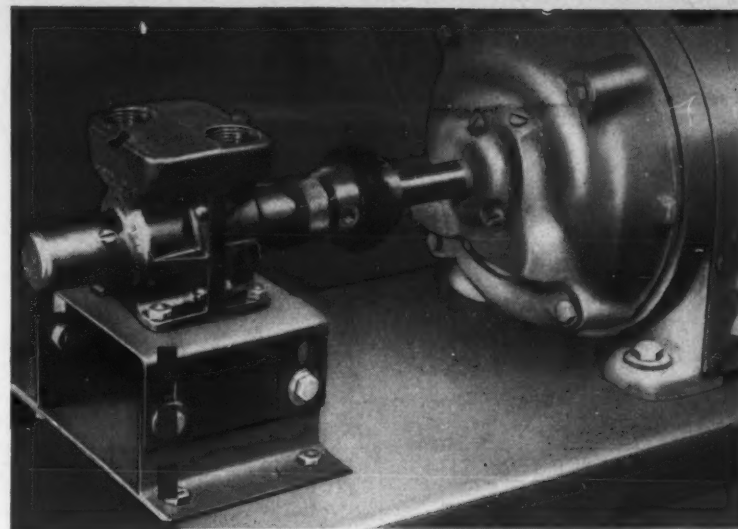
(Announced by Superior Grain Separator Company, division of Superior Separator Company, Dept. CP, Hopkins, Minn. . . . check CP 2520 on form, pages 2 & 3.)

Brighter plating possible with anodic conditioner

Two-color folder describes anodic conditioner, Composition No. 95, which effectively removes films and overcomes obstacles that most commonly interfere with successful electroplating on die-cast zinc.

Among advantages offered by this material are brighter plating, no anodic blackening, and fewer rejects. These are possible, according to manufacturer, because Composition No. 95 removes all films, has controlled action, rinses freely, avoids hydrogen gas absorption, and minimizes the amount of heat blistering.

"Good News About Electrocleaning Zinc-base Die Casting" is issued on letterhead request to Oakite Products, Inc., Dept. CP, 118F Rector St., New York 6, N.Y.



The Universal Pump for Lab. and Pilot Plant

- If it's 10 g.p.m. or less you need at pressures up to 70 psi, the Eco All-Chem is the pump you want.

Handling 70 percent of all corrosive chemicals, including such hazardous fluids as nitric acid and hydrogen peroxide—Eco All-Chem Pumps with their All-Teflon and stainless steel construction will handle most, if not all your requirements. Simplify pump selection. Cut pump and repair part inventories.

Select this "universal" chemical pump that is the outgrowth of nuclear, guided missile and other classified installation requirements.

- *Outstanding Characteristics:* Positive displacement with two opposed axially oscillating impellers equivalent to duplex piston operation. Minimum pulsation, air-entrainment, non-foaming, lowest corrosion rate of any stainless steel pump, highest suction lift over widest temperature and viscosity range, self-priming on non-volatile liquids. Applicable to direct motor drive at 1750 RPM and to all other standard driving methods.

ECO ENGINEERING COMPANY
12 New York Ave., Newark 1, N. J.



ECO

When inquiring check CP 2521 on handy form, pgs. 2-3



**FREE
ILLUSTRATED
BOOKLET**



AMERICAN TOOL & MACHINE COMPANY
1412 Hyde Park Avenue, Boston 36, Mass.

Please send me my free copy of the new AT&M booklet "Centrifugal Force." I am interested in the following processes:

Separation ☐ Extraction ☐ Dehydration ☐ Clarification ☐ Coating ☐
Filtration ☐ Draining ☐ Thickening ☐ Impregnation ☐ Sedimentation ☐

ANY OTHER PROCESS.....

**SAVE TIME, SPACE
AND COSTS WITH**

A.T. and M.
CENTRIFUGING

Name.....Title.....

Company.....

Street.....

City.....Zone.....State.....

When inquiring check CP 2522 on handy form, pgs. 2-3

*construction
and maintenance*

Perfect Protection Provided for 24 Years by Clay-asphalt Coating



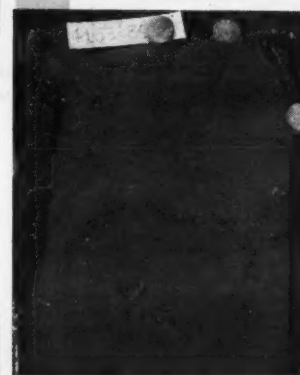
Fig. 1—Clay-asphalt coating did not chip when it was cut with a knife

Fig. 2—No serious cracks are discernible in surface after 24 years exposure

Fig. 3—Removal of coating from a panel indicates that metal is still OK



Film of about 3/64" thickness on steel panel remains soft and ductile, showing negligible wear, while resisting ravages of weather in industrial atmosphere



USES: For protection of metal and masonry structures, as well as roofs, from general exposure conditions. It can also be used for cinder block, concrete, brick, saturated felt, and other materials.

Features: A clay type emulsion coating of about 3/64" thickness was still in satisfactory condition after 24 years exposure outside in an industrial atmosphere. The film was still soft and ductile, showing negligible wear. For all intents and purposes, protection of the metal was perfect. It is said that this test indicates application of such a coating to buildings and roofs can be made with confidence that no replacement or repairing will be required during the active service life of the structure.

Description: Cold rolled polished steel panels (not precisely defined or carefully cleaned) were coated with the clay-asphalt

product and exposure records started in 1928.

Application was at the rate of five gallons per 100 sq ft, providing the protective film of approximately 3/64" thickness upon drying. Exposure of the panels was made at East Rutherford, N. J., in a highly industrial atmosphere. In 1949, they were transferred to a new site at Whippany, N. J.

The last inspection of the panels was made in late 1952, after more than 24 years exposure. At that time the following observations were made:

- 1—As shown in Fig 1, the coating was still soft and ductile. It did not flake or chip when cut with a knife.
- 2—No serious cracks or blisters were discernible, surface defects having been created only by finger-nail testing by various observers over the years, as illustrated in Fig 2. The badly cracked brittle alligatored material around the edge is regular roofing asphalt, applied hot as a bedding and control compound. Wear was negligible, as evidenced by visibility of original identification markings (4158-Panel-39) directly in the film.
- 3—Removal of the coating in one place (Fig 3) indicates that metal was very well protected.

Long lasting protection furnished by the coating may be explained by the nature of the clay-asphalt emulsion. It is known that the base asphalt, while relatively soft, will crack, harden, and alligator, when exposed alone. However, in this coating the reinforcing network of clay deposits around the asphalt particles as the emulsion coagulates in the drying stage. This prevents the asphalt from flowing and explains the absence of alligatoring. Clay network is easily detected by microscopic observation of carefully levigated films.

If the small quantity of clay present were added as a powder to hot asphalt, little, if any, improvement would be achieved. Apparently, the asphalt particles deposited from the emulsion remain separated and protected by a surrounding sheath of clay, thereby delaying oxidation and removal of the usual water soluble oxidized compounds.

This network structure also permits drying from the bottom upwards, eliminating initial corrosion of the metal. Subsequently, a slight erosion of the surface from exposure provides an impermeability to moisture from the outside. This can be followed by measurement of electrical conductivity of the film, which decreases rapidly to a very low figure.

While it is obvious that structures protected with these asphalt emulsions present a dull black, unprepossessing appearance, this objection can be readily overlooked when the extensive savings are considered. Successive paintings and repainting are eliminated. Usually, on industrial properties, color schemes are secondary to overall maintenance costs.

(Information on Hydralt Protective Coating, Type C-13-HPC was obtained through courtesy of The Flintkote Co., Dept. CP, P. O. Box 157, Whippany, CP 2523 on handy form, pages 2 and 3.)

CORROSION'S PLAYGROUND

Where **INSUL-MASTIC**
stands guard!

Moist, salty atmosphere makes the Gulf Coast of Texas the *Playground of Corrosion*. Here Refineries and Chemical Plants rely upon Insul-Mastic Coatings for protection against rust. From Brownsville to Lake Charles you will find tanks, towers, pipes, vessels and other equipment heavily sprayed with this *Superior* coating. Maintenance operations everywhere have been greatly reduced because INSUL-MASTIC's protection will last for many, many years.

Stopping moisture alone does not prevent corrosion here. Acid, alkali and other industrial vapors work hard to break down coatings and get at the metal beneath. That's why the very durable INSUL-MASTIC coatings are so extensively specified along the Gulf Coast. They are extremely resistant to chemicals as well as to moisture.

INSUL-MASTIC's record in *corrosion's playground* cannot be approached. There are many years and hundreds of jobs to prove its lasting protection. Specify INSUL-MASTIC to prevent corrosion.

Insul-Mastic's record also includes vaporsealing thermal insulation. There's no better way to keep your insulation dry.

Think
First
of the
Coatings
that Last!

Insul-Mastic
CORPORATION OF AMERICA
Oliver Building • Pittsburgh 22, Pa.
Representatives in Principal Cities



When inquiring check CP 2524 on handy form, pgs. 2-3



Cleaning small tubes is no problem for AIRETOOL cleaners

Airetool offers small tube cleaners for every scale removal problem . . . midget cleaners for lightly scaled tubes . . . light-weight outside-mounted cleaners for small tubes that are completely plugged with rock-hard deposits.

There's an Airetool Tube Cleaner and Tube Expander for every type of tubular construction

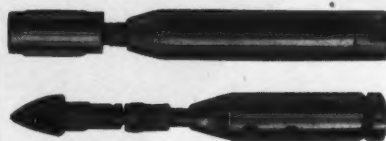
Request free literature on the complete Airetool line of cleaners and expanders. Write to The Airetool Mfg. Co., 331 S. Center St., Springfield, Ohio.



BRANCH OFFICES

New York, Philadelphia, Tulsa, Baton Rouge, Houston, Hudson Heights (N. J.)

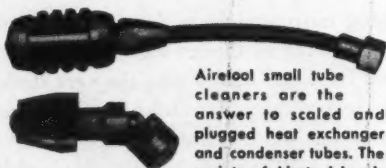
Representatives in principal cities of the U.S.A., Canada, Mexico, South America and England.



Airetool midget cleaners will restore lightly scaled small tubes to peak efficiency with no danger of metal removal.



Outside-mounted cleaners handle a variety of cleaning jobs. Three types with motor speeds up to 4,000 RPM, handles even the toughest cleaning problem. Convenient handle valve provides precision control at all times.

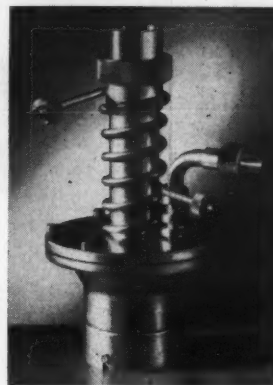


Airetool small tube cleaners are the answer to scaled and plugged heat exchanger and condenser tubes. The variety of Airetool heads solves EVERY small tube cleaning problem.

CONSTRUCTION & MAINTENANCE

Easy access for cleaning, inspection offered by oil diffusion pump

Design which makes it easy to take apart for cleaning or inspection is featured by oil diffusion pump. Unit consists of only three basic parts: jet manifold, jacket, and boiler, with its detachable heater. Jet manifold, which is a three stage unit of welded steel, fits snugly in boiler compartment and is completely enclosed by the jacket. Six Allen screws hold jacket and boiler together and a synthetic rubber "O" ring provides vacuum tight seal. By simply loosening these six cap screws, the three parts come apart for inspection, draining, cleaning, and filling.



Six cap screws hold three basic parts together

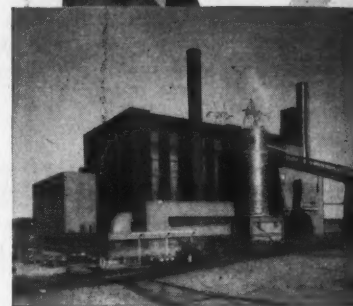
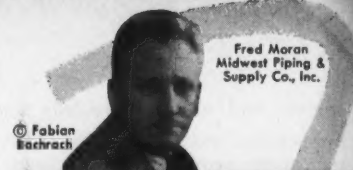
Cleaning of jets and internal surfaces is easily done without disturbing connections to vacuum or cooling systems. Pump is attached to vacuum system by mean of "O" ring connectors with the result that it may be disconnected or reconnected quickly, always with a vacuum tight seal.

Pump is based on the principle of entrapping gas or air molecules by a stream of oil vapor, the oil being vaporized by application of heat. As oil molecules leave surface of oil in boiler, they are forced upward through a vertical column where they are deflected downward and outward at sonic velocities through jets placed at three different levels. Air or gas molecules from system are swept along by oil vapor stream to lower chamber where they accumulate and are readily removed by the forepump. Oil vapor condenses on cool surface of jacket and returns to boiler.

Organic fluids, such as those used in diffusion pumps, are easily contaminated if exposed when hot to the atmosphere for even short periods of time. If exposure has been slight, oil will possibly purify itself after a few hours of pumping. However, if pressure remains high, fluid will need to be changed. Condition of oil is easily determined by color and odor. If oil is dark and odor is strong, thorough cleaning is necessary. For this reason, easy access offered by pump is said to save time and oil when disassembly is necessary.

Pump is precision engineered and sturdily made. All parts are of cold rolled steel except the brass couplings and copper cooling coil. Exterior finish is copper and nickel plated, and inside is copper plated to prevent rusting. Couplings are white nickel plated.

(Cenco Supravac OD-25 is product of Central Scientific Co., Dept. CP, 1700 Irving Park Rd., Chicago 13, Ill. . . check CP 2526, pages 2 and 3.)



Schiller Station
Portsmouth, N. H.
Public Service Company
of New Hampshire

"We've found that 'soaping' Swagelok Tube Fittings is just a waste of time . . ."

The power plant pictured above is equipped with Swagelok Tube Fittings installed by Midwest Piping & Supply Company, Inc.

Midwest, Superintendent Moran says, "We always 'soap' each joint after original installation. Testing Swagelok Fittings revealed no leaks whatever. We've found that 'soaping' Swagelok Tube Fittings is just a waste of time . . ."

Here's further impressive proof that Swagelok Fittings are leakproof . . . on Ultra-High Vacuum applications, Swagelok Fittings commonly are used in the range of 10⁻⁷ millimeters of mercury.

Swagelok catalog on request. Address Department 46



TUBE FITTINGS AVAILABLE IN:
BRASS, ALUMINUM, STEEL, STAINLESS STEEL, MONEL

CRAWFORD FITTING CO.

884 East 140th Street Cleveland 10, Ohio
Teletype CV-785

When inquiring check CP 2527
on handy form, pgs. 2-3

CHEMICAL PROCESSING

"DEL" DESCO SAYS
DON'T LET THIS
HAPPEN TO YOU!
USE DESCO LUBRICANTS



Valve operation should be easy, and it can be if you use DESCO LUBRICANTS and a DELTA GUN . . . and they make the matter of plug valve lubrication easy tool

WHY DESCO LUBRICANTS ARE BETTER!

DESCO LUBRICANTS are chemical compounds and not just plain greases. Each one is compounded to do a particular job and do it well. No fillers are used. No inert material. That's why there is no caking, no "hardening of the arteries". It also explains why DESCO retains all its lubricating qualities, and does not bleed or deteriorate in storage.

ONLY 4 DESCO LUBRICANTS HANDLE ALL VALVE SERVICES

That's right, only 4 DESCO LUBRICANTS will handle all the lubricated plug valves you have, no matter what their service — hydrocarbon, acid, caustic or LPG. Think what this means in reduced warehouse stocks and the possibility of using the wrong lubricant.

CONVENIENT STICKS OR BULK



Packed in clean, convenient sticks to fit Delta Gun, or in smaller sticks for jack screw lubrication, or in drums for volume lubricators.

Write for Valve Technical FILE

Complete data on lubricant services, conversion charts, and application of Delta-Desco Plug Valve Lubrication Equipment.



DELTA ENGINEERING SALES CO.

806 Louisiana Ave., Shreveport, La.
Sales Offices in All Principal Cities

DESCO
Plug Valve
LUBRICANTS

When inquiring check CP 2528
on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

Inert, corrosion-resistant plastic pipes made to transmit natural gas . . .

suitable for use in any soil or climate

Uses: Two types of plastic pipe (rigid and flexible) are for installation of new gas service lines and replacement of old, corroded metallic ones.

Features: Advantages of both types of pipe are said to include corrosion resistance, greater carrying capacity, elimination of interior build-up, light weight (only 1/8th that of steel pipe), rapid and easy handling, elimination of electrolysis, and excellent strength and durability.

Description: "GR" rigid plastic pipe for installation of new gas service lines has an impact strength well in excess of recommended requirements of gas industry, and has effective fiber stress over 3600 psi. Suitable for use in any type of climate, it is said to permanently resist chemical attack of corrosive soils and waters. Because it is manufactured from an inert material, electrolytic corrosion is not possible. In addition, it will transmit more gas at any given pressure than metallic piping of equal diameter, according to manufacturer.

Pipe permits fast installation. It eliminates need for materials handling equipment and can be assembled in the field rapidly. It is furnished in 20-ft sections which can be cut to desired length with an ordinary hand saw or pipe cutter. Sections can be connected by means of any standard compression coupling or cemented-type coupling, as well as all-plastic compression coupling.

Produced from the same corrosion-resistant material as "GR", "GF" flexible plastic pipe facilitates rapid replacement installations. It is inserted directly into old, corroded service line and, because of its flow characteristics, is said to supply a comparable volume to the meter. It is connected directly to service tee by means of a compression coupling and to riser by a plastic adapter and a compression coupling.

Flexible pipe features the same mechanical, thermal, electrical, and chemical values as rigid pipe. Because it is flexible and supplied in long lengths (up to 250 ft), this pipe can be pulled easily through old lines which have been reamed until reasonably open.

(Products of Carlon Products Corp., Dept. CP, 10225 Meech Ave., Cleveland 5, Ohio . . . or for more information check CP 2529 on handy form, pages 2 and 3.)

For more information on product advertised at right, specify CP 2530 . . . see information request blank between pages 2 and 3.



PANALARM
"50"

OPENS THE DOOR

TO MORE DEPENDABLE
ANNUNCIATOR
PERFORMANCE

WITH NEW
"INSTRUMENT-TYPE"
CONSTRUCTION

LOOK inside the new Universal PANALARM "50". You will realize that here, at last, is an annunciator system built for long term dependability and service. Built to match the responsibility an annunciator must assume in your plant.

The PANALARM "50" Cabinet has a substantial hinged door . . . with sub-door to allow easy access to signal lamps. It has a new, rugged chassis design . . . pre-wired to handle any standard audio-visual signal requirement . . . and so flexible that signal sequences can be changed by simple terminal connections. No re-wiring is needed.

All moving parts and contacts of the PANALARM "50" are within hermetically sealed, plug-in units. They are corrosion-proof and suitable for Class I, Div. 2 locations. All connections are made to a single terminal block . . . with ample space for wiring.

SEND FOR COMPLETE 40-PAGE MANUAL

Ask for Catalog 100-1



PANALARM PRODUCTS, INC.
6312 North Broadway, Chicago 40, Illinois

...HAVING CORROSION PROBLEMS



Try the "NO-RUST TWINs"



the quickest "paint" solution to corrosion, yet!

The "no-rust twins" bring a smile to the face of the most hardboiled maintenance engineer—for they give him two powerful weapons in his battle for lower cost maintenance painting.

TYGORUST—a new primer that cuts surface preparation costs in half. Goes over *wet* or dry rusted steel with no more surface preparation than wire brushing loose rust and scale. Goes over old paint coatings, too. Dries within minutes. Stops and inhibits rust formation.

... And forms the perfect primer for Tygon vinyl top-coats.

TYGON PAINT has been thoroughly proved during the past 15 years in hundreds of the toughest applications: in chemical plants, in metal finishing plants, in oil refineries, in pulp and paper mills—wherever fume corrosion has been a problem. This top-quality vinyl coating outlasts, outwears, outperforms conventional coatings two to one.

Put the two together—**TYGORUST** and **TYGON PAINT**—and maintenance painting costs, per foot—per year, hit a new low.

108-0

WRITE FOR THIS BOOKLET TODAY!

Tells you just what you can expect from Tygon Paint and Tygorust under the corrosive conditions that exist in your plant. Free on request. Address: Plastics & Synthetics Division, The U. S. Stoneware Co., Akron 9, Ohio.



U. S. STONEWARE

Akron 9, Ohio

CONSTRUCTION & MAINTENANCE

Seat wear and abrasion reduced by separate operation of valve disk and diaphragm . . .

design enables closing of valve in event of diaphragm failure

Uses: Designed for such applications as shut-off, throttling, and control of acids, chemicals, and other corrosive and abrasive fluids.

Features: Diaphragm and disk function individually on valves. Thus, sealing the mechanism and seating the disk are accomplished separately. Diaphragm is not subjected to seat wear and abrasion. In severe applications, this design makes it possible to close valve in event of diaphragm failure. Other design features of valves, designated X-V series, include: replaceable disk; corrosion resistant materials; full port capacity; easy-to-read valve position indicator; quick, easy operation; low pressure drop; and body strength provided by a rib support.

Description: Disk of diaphragm-principle valve is constructed with ample covering surface material for closure over fine grits and ample thickness for long life and minimum maintenance. Even vacuum service is readily handled, according to manufacturer.

Valves are manufactured with bodies of cast iron, 316 stainless steel, or Hastelloy "C". They are available either unlined or lined with same material as diaphragm and disc. Diaphragms are of rubber, Neoprene, Kel-F or Buna-N; disks are of rubber, Neoprene, 316 stainless steel, Kel-F, or Hastelloy "C". Sizes range from 1/2" through 4". Connections are flanged, screwed, or union. Corrosion resistant union ends are standard with some models of this series.

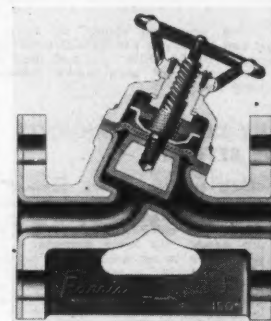
(Product of Farris Flexible Valve Corp., Dept. CP, 505 Commercial Ave., Palisades Park, N. J. . . . or for more information check CP 2532 on handy form, pages 2 and 3.)

Permits maintenance of smaller inventory for suppliers of hydraulic hose . . .

any length is readily available with cutting and coupling equipment

Uses: For cut-off, skinning, and coupling of hydraulic hose sections.

Features: Equipment allows supplier to maintain a smaller inventory of hydraulic hose, yet maintain a complete range of sizes in stock. It is said that any length hose can be assembled in about 5 minutes.



Valve maintenance reduced by separate sealing and seating

Description: Hydraulic Hose Coupling Shop is a complete, self-contained unit which includes cut-off, skinning, and hydraulic press sections. Equipment will handle make-up of single- or double-braided hose from 1/4 to 1 1/4". Complete set of accessories is available with Shop. These include stock of hydraulic hose and couplings.

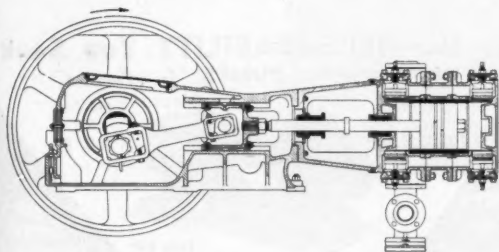
(Product of Champ Industries, Div. of Hose Accessories Co., PO Box 6781, Philadelphia, Pa. . . . or for more information check CP 2533 on handy form, pages 2 and 3.)

Design of compressor employs steel-backed cylinder-liner of carbon . . .

cylinder head constructed in segments to facilitate inspection

Uses: For air or gas compression duties in breweries, food processing, chemical industries, and for instrument air.

Features: Design of class ATL and ATCL Oil-free air and Oilfree gas compressor features a steel-backed cylinder-liner of carbon which obviates the necessity of a tail rod for the purpose of floating the piston. Also, cylinder head has been constructed in segments (class ATL only) which permits removal for inspection purposes without interrupting



Cross sectional view of Class ATL compressor showing segmentation of cylinder

intake or discharge connections. Thus cooling passages are accessible and easily cleaned.

Description: Class ATL and ATCL compressors are essentially an advanced design of company's Class 3-ATC compressor which incorporated a tailrod and bearing working with crosshead to float piston within air cylinder and employed piston rings of carbon. Compressors are said to have a greater life expectancy than previous units and take a minimum of maintenance. Units are guaranteed by company to compress air or gas free of impurities.

Absence of lubrication in air cylinder is said to banish the risk of fires and explosion in machine proper, discharge line, and in air receivers. Also compressor valves remain clean and efficient.

(Class ATL and ATCL compressors are products of Pennsylvania Pump and Compressor Co., Dept. CP, Easton, Pa. . . . or for more information reader may simply check CP 2534 on convenient Reader Service slip between pages two and three.)

Use the free air to make your own LOW COST OXYGEN and NITROGEN

2-in-1 Tonnage GENERATORS

Standard models with
oxygen capacities to
1000 TONS PER DAY
Nitrogen capacities larger

A typical Air Products Tonnage Oxygen-Nitrogen Generator in operation since February, 1951. Oxygen capacity, 450 tons per day.

AIR PRODUCTS TONNAGE GENERATORS for oxygen, nitrogen *unlimited!* Standard models or specially designed. High or low pressure cycles according to requirements. Generators for production of oxygen and nitrogen, gas or liquid, in virtually any quantity, of any purity and at any pressure.

AIR PRODUCTS HIGH-PURITY GENERATORS slash oxygen costs and inert gas costs. Make both with one generator—produce super high-purity oxygen and nitrogen *simultaneously* or individually. Make what you want when you want it: compressed oxygen, high or low pressure nitrogen, liquid oxygen, liquid nitrogen.

What are your requirements? Write to
AIR PRODUCTS, INCORPORATED
Dept. K, Box 538, Allentown, Pa.

Air Products INCORPORATED OXYGEN-NITROGEN GENERATORS

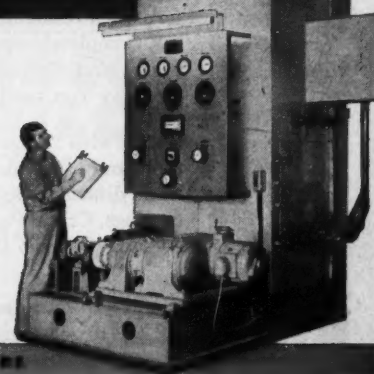
Specialists in Gas Separation by Low-Temperature Processes

When inquiring check CP 2535 on handy form, pgs. 2-3

2-in-1 High-Purity GENERATORS

OXYGEN to 99.9% Purity
Capacities to 12,000 cubic feet per hour

NITROGEN to 99.99% Purity
Capacities to 36,000 cubic feet per hour

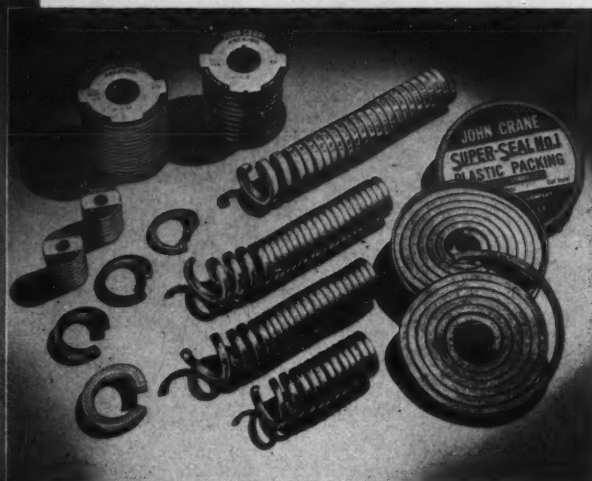


Check

with

JOHN CRANE

**TO GET THE RIGHT PACKING
FOR EVERY CHEMICAL SERVICE**



Check your problem. It may be in the handling of caustics or acids . . . solvents or gases . . . hot liquids or other chemicals.

Check "John Crane's" complete line of packings for the chemical industry. You'll find that "John Crane" engineers have designed and developed a particular type of packing to meet your individual applications or service condition.

Check "John Crane" for types and sizes. You'll find an exceptionally wide range of metallic, semi-metallic, plastic, fabric and Teflon* packings . . . spirals, coils, sheets and die-formed rings and sets to fit all stuffing boxes.

Check "John Crane" for quality and availability. Only the finest materials, binders and lubricants are used, forming a resilient, flexible, non-frictional strong packing. Completely stocked warehouses throughout United States and Canada give you prompt service in the quantity you need.

Check with "John Crane" engineers for recommendations and assistance you need for handling even your most difficult applications. Send for fully illustrated catalogs. Crane Packing Company, 1821 West Cuyler Avenue, Chicago 13, Illinois.

*Du Pont trademark for tetrafluoroethylene resin.

JOHN CRANE

CRANE PACKING COMPANY

When inquiring check CP 2536 on handy form, pgs. 2-3

CONSTRUCTION

Pipe reconditioned with joint cleaner

Uses: Joint cleaner is designed to speed reconditioning of old or reclaimed well pipe and pipe lines.

Features: High speed joint cleaner automatically cleans inside or outside pipe ends or threaded joints in 6 to 8 sec. It requires no changeover of equipment to clean inside or outside. Manufacturer claims it will clean pipe ends of 2 to 10".

Description: Joint cleaner has a wire-brush head that revolves around pipe ends to remove all deposits. It also has a provision



Joint and thread cleaner in action restoring outside threads to original condition

for shooting solvent or cleaning fluid into pipe end to dissolve caked material. Cleaner consists of an air-driven motor and a precessing head containing a spring-loaded brush guide and wire brush.

Motor is a single-stage, air-driven type, slip-fit constructed. It is muffled and provision is made for proper lubrication. Cleaner head consists of a 2" replaceable wire brush. Cleaner precessing head revolves around pipe end at 40 rpm. Entire unit weighs 16 lb, and is portable.

(Product of The Airetool Mfg. Co., Dept. CP, 300 S. Center St., Springfield, Ohio . . . or for more information check CP 2537 on handy Reader Service slip between pages two and three.)

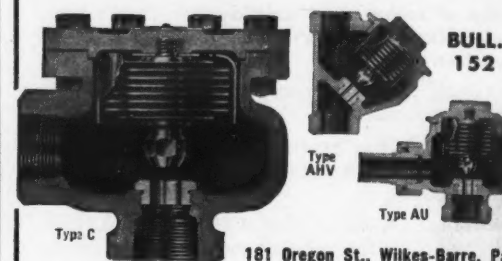
Survey chart on enamel

A check chart on complete analysis (by industry) of the use of enamel, and where to use it in production and maintenance is available from The Wilbur & Williams Co., Dept. CP, 130 Lincoln St., Boston 35, Mass. When inquiring specify CP 2538 on handy form, pages 2 and 3.

Nicholson Steam Traps

CUT THIS HEAT- UP CYCLE 40%

Primarily to solve a freeze-up problem on their jacketed kettles, an Eastern processor replaced mechanical traps with Nicholson thermostatic units. But, in addition, they found heating time was shortened 40%. Credit is given the higher, more even temperatures which Nicholson traps effect. See why leading plants are increasingly standardizing on Nicholson for faster heat transfer. 5 types: size 1/4" to 2"; press. to 250 lbs.



W. H. NICHOLSON & CO.

TRAPS · VALVES · FLOATS

When inquiring check CP 2539 on handy form, pgs. 2-3

For the DEPENDABILITY You Seek we recommend PUMPS "by Aurora"

PUMPS "by Aurora"

Capacities to 4,000 G.P.M.

Type OD
Horizontally Split Case, Double Suction, Single Stage Centrifugal Pump

WRITE for BULLETIN 105

Heads to 300 Ft.

For Every Purpose

The Type OD PUMPS

— for general water supply for municipal-ities, industries, office buildings, institutions—also — for handling liquids, chemical solutions, oils, etc. in industry.

APCO TURBINE-TYPE PUMPS

— ideal for "1001" duties where small capacities and high heads predominate. Get acquainted.

Write for CONDENSED CATALOG "M"

DISTRIBUTORS IN PRINCIPAL CITIES

AURORA

PUMP COMPANY

SUBSIDIARY OF THE NEW YORK AIR BRAKE COMPANY
62 LOUCKS STREET, AURORA, ILLINOIS

When inquiring check CP 2540 on handy form, pgs. 2-3

CHEMICAL PROCESSING

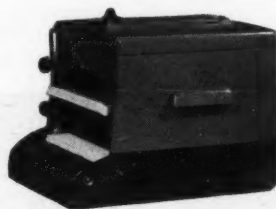
**Typewriter-size unit gives
3 copies in 60 sec on
plain office paper**

Uses: For rapid production of multiple copies of letter-size papers.

Features: With machine, one photo-exact copy can be obtained in about 50 sec, and three copies in 60 sec. These copies are same-size, black-on-white duplicates of original material and are immediately ready for use. They are said to be long-lasting, have good legibility, and can be referred to, written on, mailed, or filed as desired.

Description: Copies can be produced in any office under ordinary illumination. The only service connection is a 110 v outlet. Duplicates can be made from practically any typed, written, drawn, or printed original through the 8½ x 11" size, including books, magazines, and other pages printed on both sides. They may be produced by anyone with only a few minutes instruction on how to use the Verifax Printer, according to manufacturer.

Printer utilizes the familiar "reflex printing" method. Sensitized matrix is first placed on top of lamp bank built into top of printer. Letter or document to be copied rests face down, on top of matrix. Exposure is controlled by an electric timer built into the unit. After exposure, matrix is slipped into an activator solution in bottom of unit. This single-solution is easily mixed and in general office operations, lasts a week. Matrix paper is left in activator for twenty seconds. As matrix is withdrawn, it is pulled under a roller in contact with Verifax Print paper. This paper is not sensitized. After the two sheets are withdrawn from printer, they are stripped apart, and a copy of the original document is ready for use.



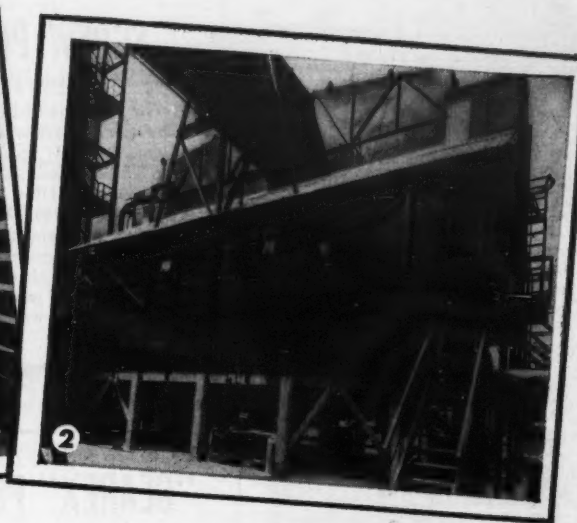
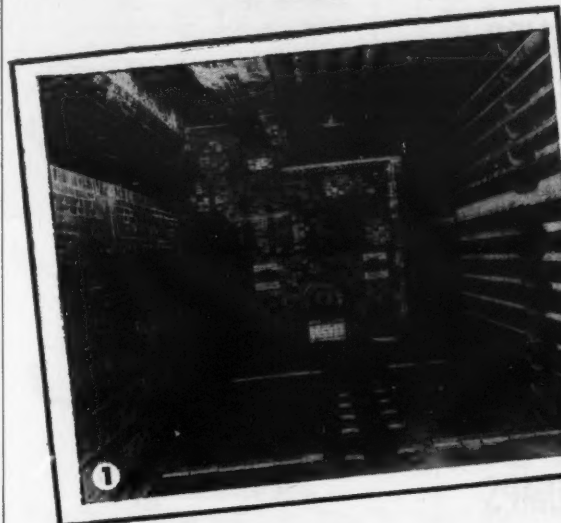
Machine is designed for office use

Extra copies of the original may be made as fast as matrix can be re-inserted in the activator and withdrawn in contact with another sheet of the special paper. Copies from matrix can often be made on regular paper or blank office forms instead of Verifax Print paper. It is said that a number of office papers have been tested and found satisfactory in this connection. Whenever more copies are needed than come from one matrix, extra copies may be readily produced by repeating procedure with new matrix. The printer is designed especially for office use. It is about the size of a typewriter and is made of two-tone, high-strength plastic with an attractive finish. It is reportedly a time-saver in any operations involving continual copy work.

(Product of Eastman Kodak Co., Industrial Sales Div., Dept. CP, 343 State St., Rochester 4, N. Y. . . . or for more information reader may simply check CP 2541 on convenient Reader Service slip between pages two and three.)

4

Sure Ways to Save Money in PROCESS FURNACES



In process furnace operation, every dollar counts. That's why leading manufacturers of chemical and petroleum process furnaces save their customers money *four ways* by using B&W Insulating Firebrick. These durable, lightweight brick . . .

1 CUT INSTALLATION COSTS — B&W Insulating Firebrick are easy to install. They can be cut, drilled or shaped on the job with ordinary woodworking tools. Their lightness makes them easy to handle.

2 ELIMINATE EXPENSIVE ALLOYS — Because of their high insulating values, B&W Insulating Firebrick can be supported with ordinary carbon steel hangers. Expensive, heat-resisting alloys are not necessary.

3 REDUCE DOWN-TIME — These brick have low heat storage, cool off quickly. This makes possible quick access to the furnace for inspection. They heat up quickly to get back on the line, too.

4 LAST FOR YEARS — In thousands of installations, B&W Insulating Firebrick have proved their staying power. Process furnace operators know these brick offer long, maintenance-free service.

You, too, can profit by this four-way economy of B&W Insulating Firebrick. Ask your B&W representative for all the facts on these cost-cutting refractories. He'll be glad to discuss your refractory problems with you.

- ① Interior of The M. W. Kellogg Co. Feed Preheater Furnace lined with B&W K-26 IFB.
- ② Exterior view of Feed Preheater Furnace.



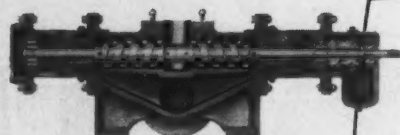
B&W REFRACTORIES PRODUCTS — B&W Allmet Firebrick • B&W SO Firebrick • B&W Junior Firebrick • B&W Insulating Firebrick
B&W Refractory Castables, Plastics and Mortars • OTHER B&W PRODUCTS — Stationary & Marine Boilers and Component Equipment...
Chemical Recovery Units . . . Seamless & Welded Tubes . . . Pulverizers . . . Fuel Burning Equipment . . . Pressure Vessels . . . Alloy Castings

When inquiring check CP 2542 on handy form, pgs. 2-3

Sier-Bath ROTARY PUMPS

Now available in
3 Lines...
Many Types

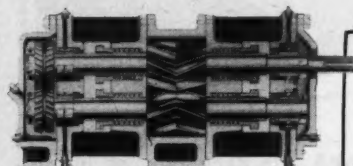
Easily adapted to
meet particular needs



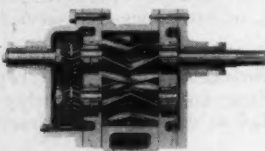
External Gear & Bearing
Bracket Type for non-lubrica-
ting materials



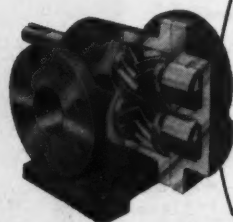
Internal Gear & Bearing Type
for lubricating materials



External Gear & Bearing Type
for non-lubricating materials



Internal Gear & Bearing Type
for lubricating materials



New "HYDREX" PUMPS

— high capacity, low cost —

For pumping fluids and semi-fluids,
32 SSU to 250,000 SSU. Capacities
1-500 GPM; discharge 300 PSI for
continuous duty, 500 PSI for inter-
mittent service.

Send for literature, naming pump type or stating
general requirements

Member A.G.M.A.

Sier-Bath GEAR and PUMP CO., Inc.

9260 Hudson Blvd., North Bergen, N. J.

Also Manufacturers of Precision Gears and Flexible Gear Couplings

When inquiring check CP 2543 on handy form, pgs. 2-3

SCREW PUMPS

— extra heavy duty —

For pumping fuel oils, crude
oils, cellulose, distillates,
etc., 32 SSU to 1,000,000
SSU. Capacities 1-700 GPM;
discharge 1000 PSI for
viscous liquids, 500 PSI for
water or light oils. Avail-
able in corrosion-resistant
alloys... with steam jack-
eted bodies, jacketed stuff-
ing boxes, water cooled
bearings.

"GEAREX" PUMPS

— heavy duty —

For pumping oils, varnishes,
solvents, molasses, etc., 32
SSU to 500,000 SSU. Ca-
pacities 1-550 GPM; dis-
charge 250 PSI for viscous
liquids, 50 PSI for water or
light oils. Available with
steam jacketed bodies.

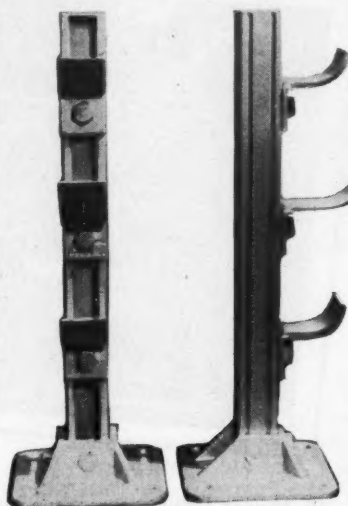
CONSTRUCTION

Valves and fittings convenient with pipe stand

Uses: For obtaining a neat pip-
ing installation for steam-heated
process machinery.

Features: Use of stands permits
convenient location of all valves
and fittings, thus making any main-
tenance repairs or adjustments less
annoying.

Description: Triple-deck pipe
stand is completely adjustable to
allow for floor mis-alignment. It



Two views of triple-deck pipe stands

can also be adjusted to give steam,
return, and air line piping the
proper gravity pitch.

(Product of Fred H. Schaub Engi-
neering Co., Dept. CP, 2110 S.
Marshall Blvd., Chicago 23, Ill.
... or for more information check
CP 2544 on form, pages 2 and 3.)

Report on gas burners

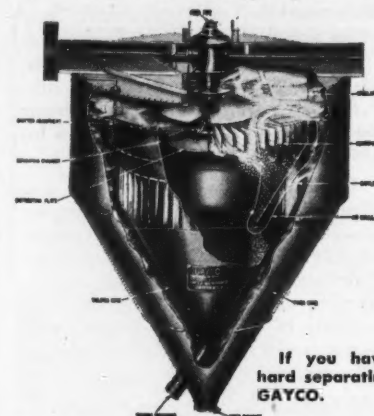
Five sizes of spear-flame gas
burner are described in 4-page
bulletin. Included are full-size
illustrations of burners and flame
length produced by them. Btu
capacity, port area, and full di-
mensions are given. Recom-
mended industrial uses cover a
wide range of applications.

Bul SC-1001 is issued by Selas
Corp. of America, Dept. CP,
Philadelphia 34, Pa. When in-
quiring specify CP 2545 on
handy form, pages 2 and 3.

GAYCO CENTRIFUGAL SEPARATORS

GAYCO Separators, equipped with the adjustable centrifugal
sizing fan — an exclusive GAYCO feature — make closer
separations. Closer separations bring about higher production
through efficient removal of the fines made by the mill.
Closer separations bring about higher quality products by elim-
inating all undersirable oversize.

"TIMKEN BEARING EQUIPPED"
GAYCO brings you all these:



Range 60
to 400 mesh
greater
capacity
25 to 30%
greater
production
Cleaner
Tailings
Uniform
Products
Slow speed for
slow wear
Quick and easy
adjustments

If you have an exceptionally
hard separating problem, TRY THE
GAYCO.

Universal Road Machinery Co.

Robert M. Gay-Division

Factory and Laboratory, Kingston, N. Y.
117 LIBERTY STREET NEW YORK 6, N. Y.
Canadian Representative: F. H. Hopkins & Co., Ltd.,
8500 Decarie Blvd., Montreal, Que.

When inquiring check CP 2546 on handy form, pgs. 2-3

FULL CONE HOLLOW CONE

SPRACO NOZZLES

Write for NOZZLE CATALOG to
SPRAY ENGINEERING CO.
125 CENTRAL STREET • SOMERVILLE 45, MASS.

When inquiring check CP 2547 on handy form, pgs. 2-3

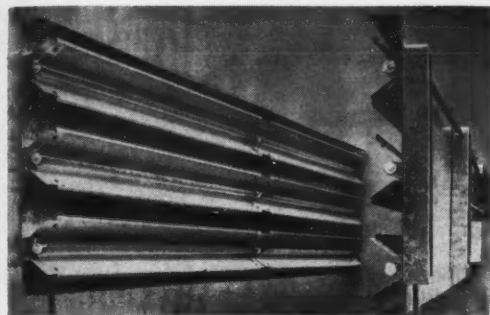
CHEMICAL PROCESSING

No sockets, only two connections on heating and drying equipment

Uses: As unit installation for infrared heating and drying applications.

Features: With units, no sockets, and only two connections, are required for a four foot oven.

Description: Merco heater tube is designed to resist thermal and mechanical shock, and is said to give no hot-spots. Because it contains no gas and operates at atmospheric pressure, it cannot explode; thus reducing fire hazards. Power consumed by tube



Power consumed by unit is transformed into heat

is transformed into heat, not light. Tube emits merely a faint glow during operation. This is important in applications involving colors which are light-sensitive and tend to fade.

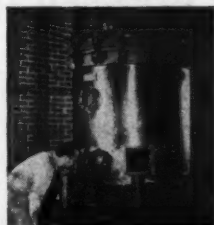
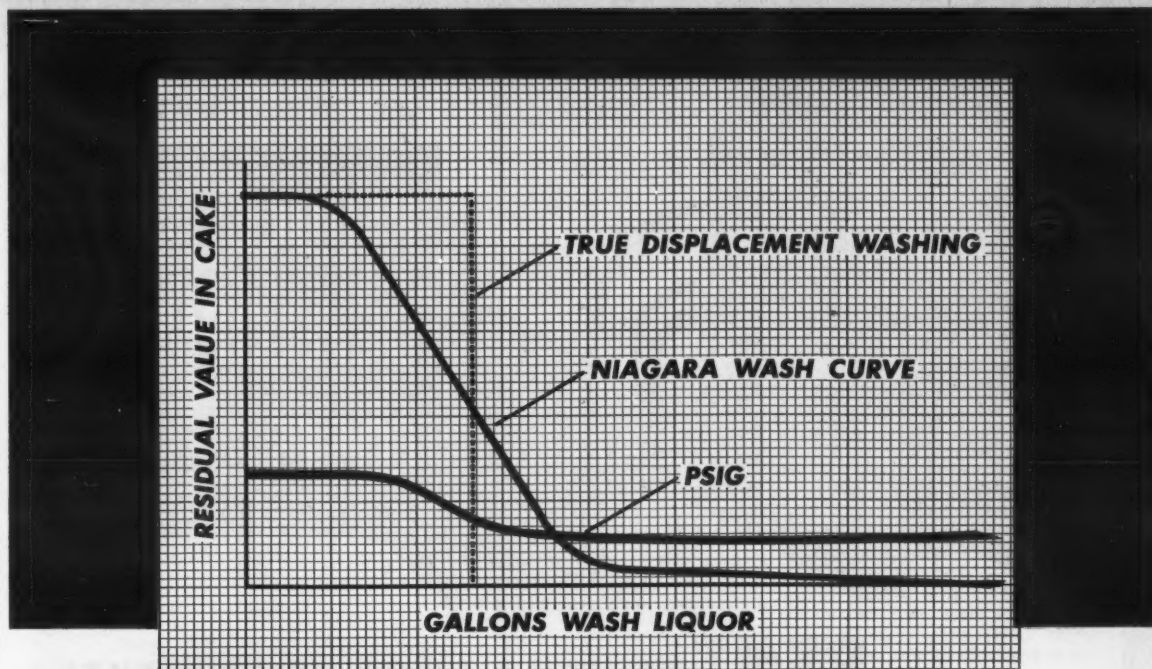
(Product of Corona Mfg. Corp., Dept. CP, 5210 San Fernando Rd., PO Box 669, Glendale 3, Calif. . . . or for more information check CP 2548 on handy form, pages 2 and 3.)

Corrosion controlled in pipe lines with insulating union . . .

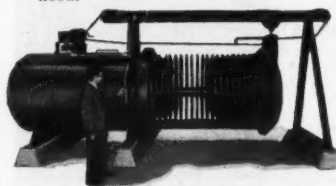
device breaks up flow of electrolytic current. An economical means of interrupting flow of electrolytic current and preventing corrosion in pipe line systems is furnished by a recently developed insulating union. Device employs the O-ring principle high-pressure sealing, with insulating gaskets between the faces of the union and around the base of the hammer lug section. Sizes from 1/4 to 10" and from 1000 to 6000 lb test pressure can be furnished.

Hydrostatic tests conducted on a 2" union under 2000 lb pressure indicated no evidence of leakage. This fitting was also disassembled and reassembled 200 times with a 1 1/2 lb machine shop hammer to see how well it would stand up. Gasket showed surface indentation but no leakage occurred when hydrostatic test was reapplied. Conductivity tests also proved that the design provides complete electrical insulation.

(Product of Brance-Kracy Co., Inc., Dept. CP, 4411 Navigation St., P. O. Box 1724, Houston, Tex. . . . or for more information reader may simply check CP 2549 on convenient Reader Service slip between pages two and three.)



FOR LIQUID CLARIFICATION Niagara Vertical Pressure-Leaf Filters are supplied in sizes handling up to 30,000 GPH. These filters are all-metal; leakproof; easily fabricated in stainless steel and other alloys; readily jacketed or lined to match your need.



FOR SOLIDS RECOVERY plus liquid clarification . . . Niagara Style "H" Pressure-Leaf Filters offer exceptionally fast removal of semi-dry cakes. Flow rates up to 45,000 GPH in one compact, leakproof unit.

if you wash your filter cake . . . this WASHING CURVE is good news for you

The curve shows what happens typically when you wash residual solvent or other liquid from the cake in a Niagara Pressure-Leaf Filter.

Notice how close this is to true displacement washing. Here's what it means in results:

You can wash 10% acid in mother liquor down to .01%, using only three volumes of wash liquor per volume of cake to get this high acid recovery.

Another example is vegetable oil. You can reduce 10% by weight of oil in the cake to .01% by solvent washing.

You can save as much as 1 1/2 hours per cycle over conventional washing (or air blowing) methods.

You can cut recovery costs decisively. Roughly 50% less steam is needed for evaporation of wash liquor, since dilution is roughly 50% less than with other filters.

You can eliminate the cost and upkeep of a separate filter used only for washing.

If you'd like more facts about the Niagara washing curve, and what it can do for you, just write us or mail the coupon today.



Niagara Filter DIVISION
AMERICAN MACHINE AND METALS, INC.

East Moline, Illinois

IN EUROPE: Niagara Filters Europe, 36 Leidsegracht, Amsterdam-C, Holland

NIAGARA FILTER Division, American Machine and Metals, Inc.
East Moline, Illinois
Please send information
on Niagara Filters for _____
(product or operation)

Name _____
Title _____
Company _____
Address _____
City _____ Zone _____ State _____

When inquiring check CP 2550 on handy form, pgs. 2-3



RENT A FEinc PILOT PLANT FILTER

Here's a low-cost way to test FEinc's high performance for your process. This completely equipped small filter is just the thing for taking the "kinks" out of a process before scaling up . . . or for routine small-scale production.

FEinc's unique rental-purchase plan eliminates heavy capital expenses for experimental work. You simply pay a low monthly rental as you use the filter . . . and get a credit on the rent paid if you eventually buy any FEinc unit.

Fabricated of Type 316 stainless steel, the Pilot Plant Filter will handle almost any continuous filtration job. It has the famous FEinc String Discharge, Submergence Washing Mechanism, and Compression Dewatering Mechanism. Any of these features can be disconnected, and a scraper-type discharge is also furnished that can be attached with only four bolts.

IMMEDIATE DELIVERY! For the first time since they were introduced in 1949, these units are now available for immediate delivery. Write us today for more details!



FILTRATION ENGINEERS, INC.
155 ORATON STREET • NEWARK 4, NEW JERSEY

SPECIFICATIONS OF FEinc PILOT PLANT ROTARY VACUUM FILTER

SIZE: 3 ft. drum dia., 1 ft. drum width. (Approx. 10 sq. ft. drum area)

CAKE THICKNESS: Handles cokes from 1/16" thick and up, including difficult slimes and fibrous materials.

WASHING: FEinc Submergence Washing Mechanism supplied, but

can be disconnected if it is not necessary to your process.

DEWATERING: Normal, wide-arc vacuum dewatering supplemented by FEinc Compression Dewatering Mechanism that can be operated either as a part of or separately from the FEinc Washing Mechanism.

MATERIALS: Type 316 Stainless Steel.

CLOTH: Cotton, Nylon, Dynel, Orlon, Vinyon, Woven Wire, etc. as required.

VALVE: Automatic valve controls pickup, dewatering, washing. Quickly adjustable, easy to change over from one job to another.

INSTALLATION REQUIREMENTS: No foundation required. All major piping furnished, ready for connection to your vacuum source.

AGITATOR: Separately driven oscillating agitator.

MOTOR DRIVES: Trouble-free, variable speed motor drive permits instant adjustment of drum speed to meet variations in filtering conditions. Agitator and filter motors each 1/4 H.P., 1750 RPM, 220/440 v, 3 ph., 60 cyc., Class 1, Group D.

FILTER DIMENSIONS: 4' long x 4'9" wide x 5' high.

SHIPPING WEIGHT: 2700 lbs. with accessories.

When inquiring check CP 2551 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

Cleaner for heat exchanger tubes is designed to handle "in-between sizes"

Uses: For use in straight heat exchanger tubes from 1/2 to 1 1/2" OD.

Features: Unit is suitable for both horizontal and vertical applications. It requires only one man to operate. No preliminary preparation of tube bundle is said to be required to clean fouled or plugged tubes in minimum time.

Description: Cleaner is a positive drive, high speed hollow rotary shaft, air-driven, scavenger drill type using carbide-tipped bits. It weighs approximately 8 lb and is 11" overall. It consumes around 70 cfm at 90 psi. Maximum power is derived at 90 psi operating at 3500 rpm.

(Product of Thomas C. Wilson, Inc., Dept. CP, 21-11 44th Ave., Long Island City 1, N. Y. . . . or for more information check CP 2552 on handy form, pages 2 and 3.)

Protection to pumps and refiners provided by compact vertical magnetic separator . . .

down-pressure trap eliminates tramp iron before it can damage equipment

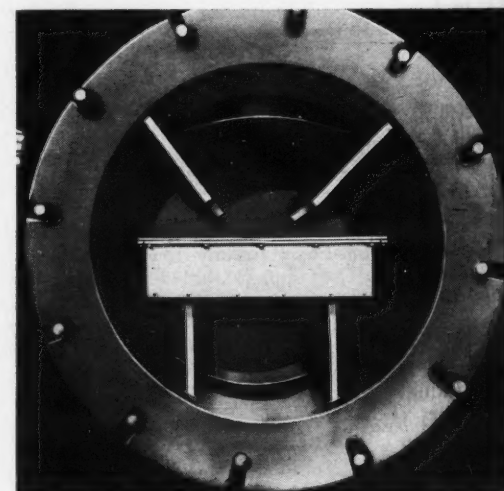
Uses: Although trap was designed especially for the paper industry, it can be used in almost every other industry affected by metallic contamination inclusions. Design of trap permits its installation in slurry lines. If desired, it can be placed in regu-



STRING DISCHARGE



SCRAPER DISCHARGE



Vertical position of trap causes material to flow directly onto face of magnet for separation of tramp iron

lators and head boxes. Another application is for cleaning wood chips ahead of digesters, where it can be used in place of, or in addition to, magnetic pulleys.

Features: Unit affords protection to pumps, re-

CONSTRUCTION & MAINTENANCE

finers, valves, wood hogs, and other equipment, preventing damage from tramp iron. Since trap can be installed in a vertical section of down-pipe, it requires little space. This position takes advantage of the force of gravity which drives the flow of material containing tramp iron directly onto the magnet's face.

Description: Magnetic vertical down-pressure trap contains a light, non-electric permanent magnet. Unit is furnished with stainless steel angle guides welded in place. Customer supplies cylindrical housing, with an inlet at top and an outlet at bottom. It is suggested that the cylinder be fabricated from 24" diameter pipe and should include baffles and magnet supports.

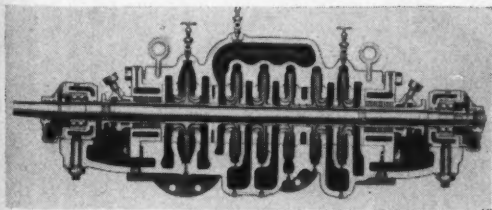
In operation, material flows onto middle of magnet face, dividing in two directions to flow off the sides of plate into the outlet pipe. Metal impurities fall by gravity and velocity into the intense magnetic field. Depth of flow over the magnet is restricted by the baffles to 3½". Pressure-sealed door on the side can be easily opened in order to slide the magnet out for removal of the collected tramp iron.

Traps are available in various sizes to accommodate volumes ranging from 1500 to 5000 gpm. Equipment can also be supplied in many strengths and designs. Basic design can be varied to fit individual installations.

(Developed by Eriez Mfg. Co., Dept. CP, Erie, Pa. . . or for more information check CP 2553 on handy form, pages 2 and 3.)

Absence of thrust control devices simplifies boiler feed pump

Accompanying illustration shows 6-stage boiler feed pump. Note the first stage impeller which is of double suction design. This enables pump to handle hot water with lower net positive suction head. Also incidental to design of this pump, stuffing boxes are subject to low pressures only — suction pressure at



first stage, and first stage pressure at other end. A particular feature is patented method of effecting non-leakage, dynamic hydraulic balance. This method insures thrust-free performance without complicated thrust control devices, according to manufacturer.

Thrustfree 5, 6, and 7-stage centrifugal pumps are available with capacities up to 1300 gpm and heads of 1200 psig, 2½, 3, 4, and 5 inch sizes.

(Product of Pennsylvania Pump and Compressor Co., Dept. CP, Easton, Pa. . . or for more information check CP 2554 on handy form, pages 2 and 3.)



Rome-Turney water-cooled condenser coil. Tube is ¾" O.D., .042" ga., bent on a 1¾" centerline diameter. Soldered helical fins are .135" wide, spaced 14 turns to the inch. Other types of heat exchanger coils are also shown. Rome-Turney forms coils out of tube up to 40 feet long, without joints.

For Copper Tube that can be BENT Rome-Turney sees REVERE

Most of the Revere Metals are fabricated by usual methods into conventional products. Some of them, however, appear on the market in forms that are unusual and possess special advantages. Take these helical-finned copper coils produced by the Rome-Turney Radiator Co., Rome, N. Y. It takes extra skill to produce coils with such small radii. The company can produce the coils shown on a commercial basis, for use in air conditioning apparatus, air compressors, and general heating and cooling applications where compactness plus high heat transfer rates are essential.

How it is possible to make such tight turns is Rome-Turney's secret. Revere does not share in it, nor does Revere want to reveal a secret of its own, which is how we turn out copper tube in a special bending temper for an application such as this. All we can say is that the two methods dovetail very nicely. If you need copper tube that can be bent easily, and offers you as well the advantages of corrosion resistance, high heat transfer,

easy joinings, see Revere. We also make copper pipe, tube in copper alloys, aluminum alloys, and electric welded steel tube. If required, the Technical Advisory Service will gladly collaborate with you, as it has with Rome-Turney, on selection and specification matters. Get in touch with the nearest Revere Sales Office.

REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.—Sales Offices in Principal Cities, Distributors Everywhere

SEE REVERE'S "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY

When inquiring check CP 2555 on handy form, pgs. 2-3

Submerged service featured in sealed centrifugal pump . . .

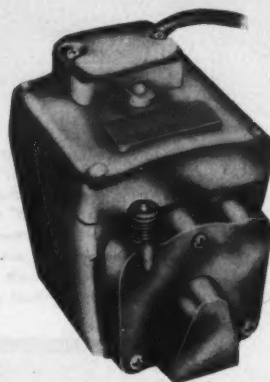
Neoprene seal allows pump to circulate liquids other than water

Uses: For evaporative coolers, condensate removers for refrigerated cooling, sump and oil coolant pumps.

Features: Motor windings cannot become wet. No service is necessary — oil supply is sufficient for life of pump. It can be operated completely submerged and will pick up within 1/2" of bottom. Neoprene seals enable pump to circulate liquids other than water.

Description:

Hermetically sealed in oil, small centrifugal pumps known as "The Little Giant" can be used in installations where low pressure, high volume pump is desired. They are made of die-cast aluminum, treated with baked on coating to prevent corrosion.



No service necessary — oil supply is permanent

Three sizes are available, handling 180, 350, and 475 gallons per hour and capable of 17 1/2 ft lift. They can be used either as an immersion or horizontal pump and can develop suction lift by use of a small foot valve.

(Product of Samuel S. Gelber Co., Dept. CP, 162 N. Clinton St., Chicago 6, Ill. . . . or for more information check CP 2556 on handy form, pages 2 and 3.)

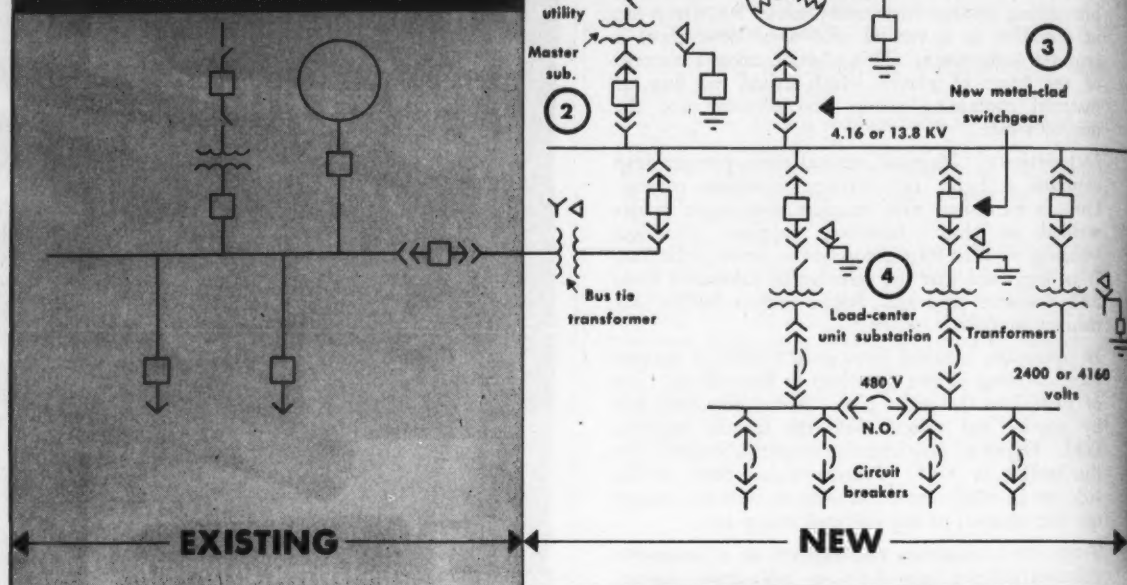
Better job done by rotary straightener with use of liquid lubricant . . .

flood lube system is integral part of machine design features

Uses: For straightening tubing or pipe from 1/4 to 1 1/2 inches in diameter.

Features: Circulating flood lubrication system for straightener's six driven rolls is an integral part of machine design. Petroleum-base liquid lubricant, directed at points where tube or pipe is in contact with each pair of rolls, materially improved straightening, dissolved residue of solutions used in drawing operations, washed away metal particles which might mar tube surface, and lengthened roll life of improved AX model.

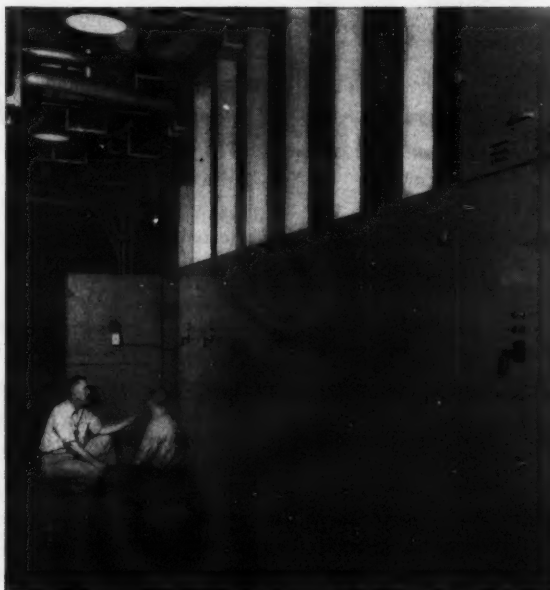
Straightener, its two 3 hp motors, and drive spindles are mounted on a unit steel table. While bolt holes in table feet facilitate permanent installation on production lines, complete unit can be quickly relocated as production requirements affect shop layouts.

ENGINEERING REPORTS:

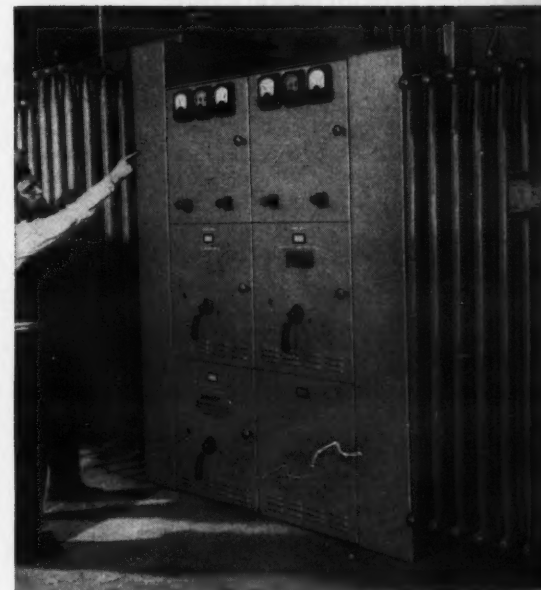
EXPANSION TO HIGH VOLTAGE IS SIMPLE. Here, a processing plant is extended by adding new power sources (1) or (2) at high voltage and connecting a high-voltage bus to an exist-

ing low-voltage bus through a transformer. Existing system is left as is; new high voltage "back-bone" transmits power through switchgear (3) to load centers (4).

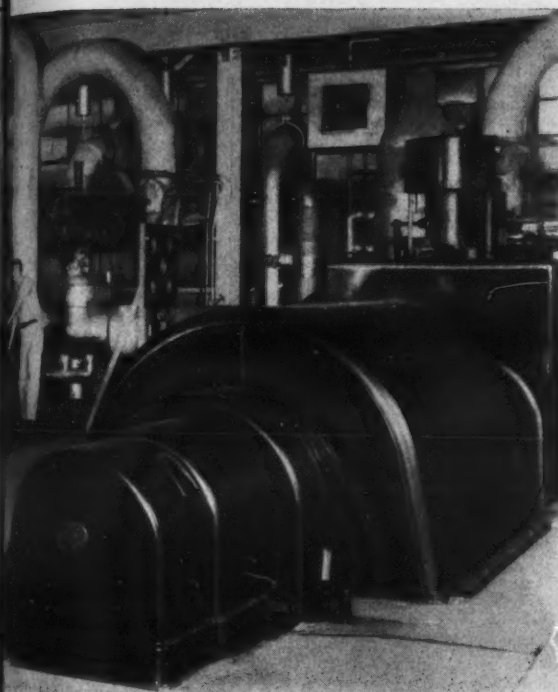
High-voltage power distribution system



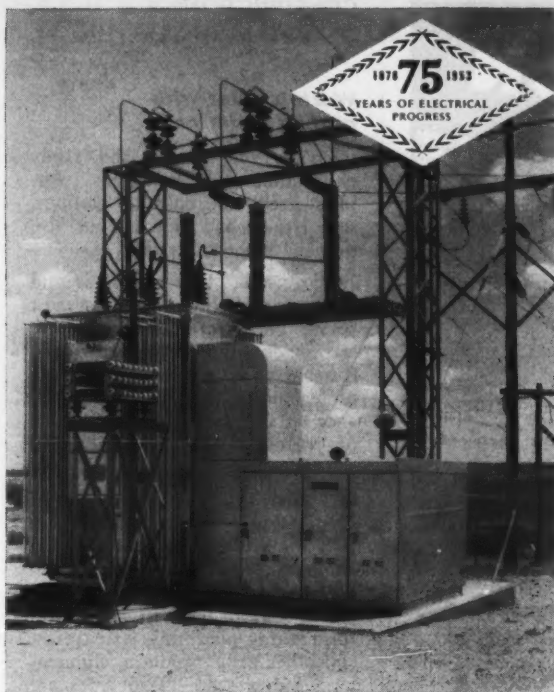
3. TO SAFEGUARD PERSONNEL, high-voltage G-E switchgear is metal-enclosed. There are no exposed live parts—switchgear can be located in work areas, close to machines.



4. FLEXIBILITY FOR CHANGING LOADS is provided by G-E double-ended load-center unit substation. Ratings, circuit arrangements are available to meet specific requirements.



1. BY-PRODUCT POWER—in plants using process steam—can be supplied economically by G-E turbine-generator. High-voltage generation means flexibility for future load growth.



2. EASY TO INSTALL—G-E master unit substation brings purchased primary power into plant at high voltage. It's a packaged unit—helps meet today's need for quick expansion.

ion system simplifies plant expansion

Engineering problems and installation costs reduced, production kept continuous by G-E "building-block" distribution equipment

The mushrooming growth of chemical processing plants continues. Power systems must be capable of expansion—in a hurry—to keep up.

G-E high-voltage load-center distribution systems are the answer. General Electric high-voltage "packaged power" units can be used to form new electrical load-center systems. Each standardized package or "building block," is a complete, factory-assembled unit. Each is ready for operation right after it is delivered. Units can be added step by step, as the plant grows, to keep costs low and processing continuous. **How a high-voltage system saves.** High-voltage power, carried to load centers, saves copper, reduces

voltage drop, improving equipment performance. The lower currents are more easily isolated—assuring production continuity. Cost of future expansion will be less. **But suppose you have a low-voltage system . . .** Combining it with a high-voltage system is simple—and can be done at little or no extra cost! It merely requires the addition of a bus-tie transformer between buses. Then, as your plant expands, the high-voltage system can be introduced as though the low-voltage system did not exist.

Planning an ideal distribution system. To guide you in a modernization or expansion program you need an over-all power system plan. See the new full-color film, "The Vital Link"—part of G.E.'s new *More Power To America* program on modern industrial power distribution systems. Contact your G-E Apparatus Sales Representative, or write to General Electric Co., Schenectady 5, N. Y.

Engineered Electrical Systems for Chemical Plants

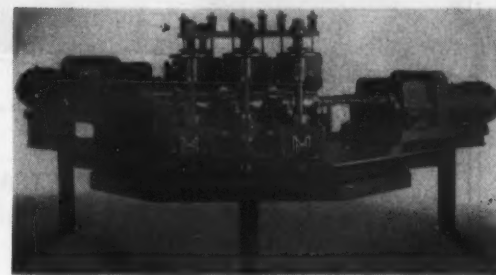
GENERAL  ELECTRIC

When inquiring check CP 2557 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

Description: Model AX guideless rotary straightener has a production speed variable up to 350 ft per minute. Floor space required is 7 ft 10 in by 5 ft 5 in.

To assure good plant housekeeping, operator safety, and economy in lubricant use, steel shield deflects any splashing lubricant into collection tray. Shield has two shatter-proof glass inspection windows; two handles ease removal of shield if desired. Another safety feature of model is covers for six drive



Complete unit can be quickly relocated as production requirements affect shop layout

spindles. Completely shielding fast-spinning drives, covers are hinged to allow ample space for spindle servicing. Where volatile lubricants are used, explosion-proof motors are standard equipment for driving straightener rolls and lubing system.

(Improved Model AX rotary straightener is a product of Mackintosh-Hemphill Co., Dept. CP, 901 Bingham St., Pittsburgh 3, Pa. . . or for more information check CP 2558 on handy form, pages 2 and 3.)

Unit specifically designed for liquefied gas transfer service

Compressors specifically designed for the transfer of liquefied petroleum gases (LPG) and anhydrous ammonia are described in 4-page, 2-color bulletin. Construction of unit is illustrated by means of a sectional view. One page of bulletin is devoted to a typical installation problem. Major steps of unloading cycle are pictured, and a practical unloading problem is worked out on the same page. Graphs indicating capacity of various machines under different pressure conditions are also presented.

LPG machine has an explosion-proof motor and starter plus other safety factors. Anhydrous ammonia unit employs a standard motor and starter and is of non-copper construction.

A feature of the compressor is that it not only transfers liquid from car by operation of the reversing valve, but also recovers practically all gases remaining and returns these back to storage tank.

Form 1052-A is issued by Dept. T-30, Ingersoll-Rand Co., Dept. CP, 11 Broadway, New York 4, N. Y. When inquiring specify CP 2559 on handy form, pages 2 and 3.

ROTARY UNION

(Reg. Trade Mark)



A REVOLVING STEAM CONNECTION

Pipe sizes 1/4" through 3"

We are Specialists in Sealing

Since 1936 our plant has been devoted almost exclusively to solving problems connected with the heating or cooling of revolving shafts and drums.

Standard model ROTARY UNIONS cover most needs in the rubber, plastics, food, paint, paper, textile, and printing fields and in chemicals. Our engineers have developed special ROTARY UNIONS for such unusual sealing applications as high pressure steam, water, hydraulics, pneumatics, hot oil, and gases.

Flexible hose connections are integral parts of each ROTARY UNION. These eliminate complicated piping and brackets and permit installation in 15 minutes. In conjunction with other exclusive construction features, they take stress and strain from moving and sealing parts, and account for the ROTARY UNION's exceptionally long service. Three years of perfect sealing, without mechanical maintenance of any sort, is not unusual.

Whether yours is an ordinary or a special sealing problem, you'll do better with the ROTARY UNION. Direct factory engineers are available at all of our offices for consultation. Please contact them or write Dept. 7C for our Catalog.

"WHERE *Good Connections COUNT*"

*Reg. U.S. Pat. Off.

PERFECTING SERVICE COMPANY

332 Atando Avenue (Home Office and Factory) Charlotte, N. C.
Atlanta, Chicago, Cleveland, Philadelphia, Providence, New York, Montreal, Toronto

When inquiring check CP 2560 on handy form, pgs. 2-3

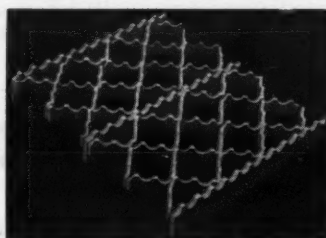
CONSTRUCTION

Work is safer with grating underfoot

Uses: For traction and safety under almost any conditions. Applies itself not only to gratings, stair treads, and ladders, but also to many other safety uses.

Features: This grating is said to provide traction under the most severe grease or sleet conditions. It provides sure footing and comfortable walking that avoids strain of leg muscles and precarious balance on slippery surfaces. Rolling of narrow wheels and industrial castors over grating is not difficult, according to manufacturer.

Description: Single strips are used for ladder rungs and safe step edgings, or are assembled with bearing bars to carry heavy loads. When set into frames, grating will form sturdy platforms, stair treads, and other grille products, eliminating dead weight. Two types are



Grating provides sure footing and comfortable walking in slippery spots

offered which may be bent to shape and will still retain their traction qualities. Other types are available for general and specific applications to meet industrial needs.

(Product of Bustin Firm-Grip Grating Corp., Dept. CP, 110 E. 130th St., New York 37, N. Y. . . . or for more information check CP 2561 on handy form, pages 2 and 3.)

A company name and address . . .

at end of each editorial article makes it easy to follow-up on ideas you read about in these columns . . . saves you time. Write direct or use the handy Reader Service slip.

THE EDITORS

Safety STEEL STEP LADDERS

FOR EVERY NEED

With safe, sure footing anybody reaches high places easier, with a sense of security that permits complete freedom of action to get the job done. Ballymore Ladders are sturdy and safe, can't roll when in use or kick out, have

lots of foot room, strong hand rails. All welded construction. Ball bearing casters permit easy movement without lifting. One to three steps without hand rails. Three to eight steps with hand rails. "Special" models.

WRITE TODAY FOR COMPLETE CATALOG

BALLYMORE CO

WAYNE 10, PA.

When inquiring check CP 2562 on handy form, pgs. 2-3

J. E. SIRRINE CO.

GREENVILLE • SOUTH CAROLINA

Engineers
ESTABLISHED 1902



PLANT DESIGN & SURVEYS • CHEMICAL • ELECTROCHEMICAL •
METALLURGICAL PRODUCTION • TRADE WASTE DISPOSAL •
WATER SUPPLY & TREATMENT • ANALYSES & REPORTS

When inquiring check CP 2563 on handy form, pgs. 2-3

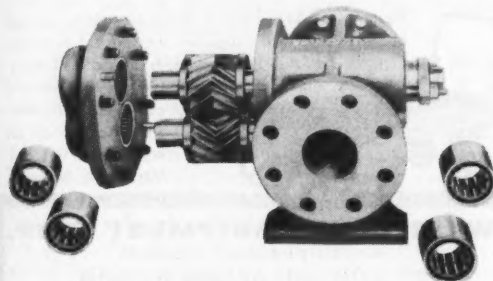
CHEMICAL PROCESSING

**Simplified design featured
in rotary gear pump with
two moving parts . . .**

only two castings are used — for the head and the body

Uses: Primarily for positive displacement of lubricating liquids, Hydrex pump will handle fluids and semi-fluids, 32 SSU to 250,000 SSU.

Features: Simplicity of the Hydrex is indicated by: only two castings used — for the head and the body; only two moving parts — the two rotors; no inner races needed in bearings as shafts are hardened and ground at the bearings; and only one stuffing box is used (under suction pressure).



Simplified rotary gear pump disassembled, showing primary parts

Description: Pump capacities are: 1 to 500 gpm; 300 psi for continuous duty, and 500 psi for intermittent service. Rotors are precision made gears. Pumps are hydraulically balanced axially. Heavy duty roller bearings are used. All connections over 2 inches are flanged. All machined surfaces are ground for easier piping and aligning.

(Hydrex rotary gear pump is a product of Sier-Bath Gear and Pump Co., Inc., Dept. CP, 9252 Hudson Blvd., North Bergen, N. J. . . or for more information check CP 2564 on handy form, pages 2 and 3.)

**Protection for plastic surfaces
in all operations**

Plastic strippable coverings for Lucite, Plexiglas, and other plastic surfaces in all operations are briefly described in 4-page brochure. Covering is a viscous water-base compound, which when sprayed upon plastic areas, forms a tough, elastic, clear film capable of withstanding abuse in normal operations. It is said to give full protection against scratches, dirt, grease, paints, or other damage. Coating is easily "peeled off" when need for protection is past. It comes off cleanly and without mess. Compound is safe to use being both non-flammable and non-toxic.

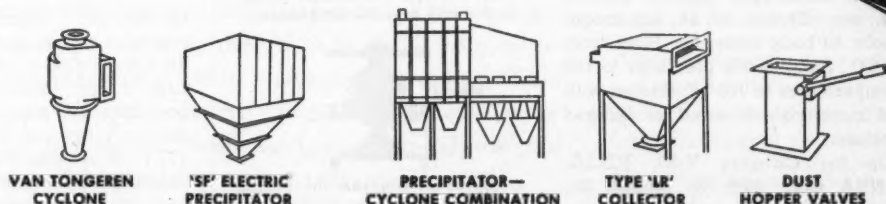
Bul M-1 is available from Spraylet Corp., Dept. CP, 1 Park Ave., New York 16, N. Y. When inquiring specify CP 2565 on handy form, pages 2 and 3.

Your Management wants to know...

The most profitable approach to dust recovery

In every industry, from chemicals to food to steel, Buell engineers, working with plant engineers, have established an enviable 18-year record of turning unnecessary dust losses into substantial new profits. What's more, Buell Dust Recovery Systems uncover, for all American industry, these additional important advantages: improved product quality, smoother plant-community relations and higher employee morale.

To take advantage of Buell's background and experience in the highly specialized science of dust recovery, ask for further information about Buell's **3 basic systems** of dust collection. See how they can help you turn dust into dollars. Send for Buell's new, informative bulletin titled, "The Collection and Recovery of Industrial Dusts." Buell Engineering Co., Dept. 11-G, 70 Pine Street, New York 5, New York.



ENGINEERED EFFICIENCY IN DUST RECOVERY

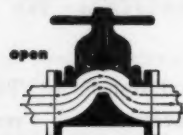
When inquiring check CP 2566 on handy form, pgs. 2-3

If your process requires the valving of "hard-to-handle" fluids...

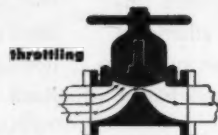


HILLS-McCANN
Saunders Patent
diaphragm valves
provide
the answer

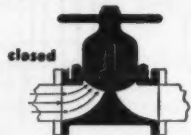
**THIS SIMPLE PRINCIPLE
ASSURES POSITIVE
LEAK TIGHT
VALVING**



Compressor is raised, lifting diaphragm by means of a stud molded into the material.



Compressor and diaphragm partially lowered. Compressor design guides and supports diaphragm.



Compressor presses diaphragm tightly against weir, pinching off flow and making a tight seal.

**Leakproof valving of air . . .
corrosive materials . . . slurries . . . solids . . . volatile and
viscous substances**

Hills-McCanna Diaphragm Valves can eliminate the problems involved in valving many of the so-called "hard-to-handle" fluids. By employing a simple pinch clamp principle, Hills-McCanna valves put an end to leakage, repacking and contamination.

Hills-McCanna Valves are available handwheel or lever operated or for operation by pneumatic or hydraulic cylinders, diaphragm motors, electric motors, etc. Choice of 14 diaphragm materials, 49 body materials. Sizes from 1/2" to 14". Suitable for pressures to 150 psi., temperatures to 180° F. (higher with special materials). Screwed or flanged connections.

Write for Catalog V-52, **HILLS-McCANN CO.**, 2370 W. Nelson St., Chicago 18, Ill.

HILLS-McCANN

saunders patent diaphragm valves

**Also Manufacturers of Proportioning Pumps
Force Feed Lubricators • Magnesium Alloy Castings**

When inquiring check CP 2567 on handy form, pgs. 2-3

CONSTRUCTION

**Paint brushes kept
straight and handy
by holder**

Uses: As a paint brush holder and conditioner during and after cleaning, and for storage.

Features: By providing a means of suspending paint brushes, handy unit conditions and keeps them available for constant or occasional use without the usual mess of paint brush care, according to manufacturer's report.

Description: Metal container holds up to six average brushes ranging up to 6" wide by 12" long, suspending them by means of removable metal clips. Container size is 13-3/4" high x 6-5/8" diam. A free-swinging handle is provided for easy carrying.

(Product of Rayo Corp., Dept. CP, Suite 31, 36 Yale Terrace, West Orange, N. J. . . or for more information check CP 2568 on handy form, pages 2 and 3.)

**Cleaner, faster welding
possible with use of
anti-spatter material**

Uses: To increase speed and efficiency of welding operations by reducing necessary clean-up time.

Features: Anti-spatter compound is brushed, sprayed, or wiped along edges to be welded and over an area extending 6 to 8" from weld. When hot spatter from welding operation strikes the compound it will not adhere to metal and thus can be easily wiped off without grinding or wire brushing.

Description: Manufacturer offers two types of anti-spatter compound: No-Clean (SO-327) which provides a firm foundation for paint and does not require removal before priming; and Pickle-Off (SO-317) for use where the job is to be pickled and for use on chromium or stainless steel where easy removal is a desirable feature. Compounds may be used in all kinds of weather. They cause no glare and have no disagreeable odor either when being applied or when being burned. They will not interfere with solidity or strength of the weld.

(Product of Thompson & Co., Dept. CP, 1085 Allegheny Ave., Oakmont, Pa. . . check CP 2569 on form, pages 2 and 3.)



Special tempered spiral springs keep load level while absorbing shocks of an uneven floor.

PRODUCT SAVER

MAN SAVER

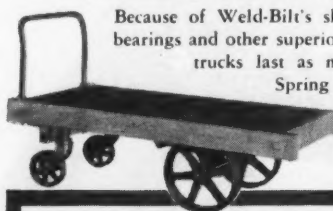
FLOOR SAVER

Weld-Bilt

SPRING BEARING TRUCKS

Here's the answer to your problem of moving materials more efficiently, with maximum protection to product, trucker and floor.

On Weld-Bilt Spring Bearing trucks, your materials move without jarring or vibration. Your truckers work faster and easier, with less fatigue. Floor drains and door sills are protected against damage, as wheels "step" over obstruction.



Because of Weld-Bilt's shock-absorbing spring bearings and other superior mechanical features, trucks last as much as 50% longer.

Spring Bearings are featured on Weld-Bilt platform trucks of all styles and designs. Write for bulletin.

WEST BEND EQUIPMENT CORP.

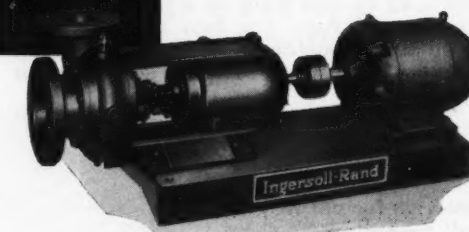
MATERIALS HANDLING ENGINEERS

322 WATER STREET, WEST BEND, WISCONSIN

When inquiring check CP 2570 on handy form, pgs. 2-3

CRV
CENTRIFUGAL
PUMPS

RIGHT for the job!



. . . in process pumping service

Ingersoll-Rand Class CRV pumps are ideally suited for evaporator and general circulating service in the process industries. Where corrosive liquids are involved, stainless steel construction can be furnished. All CRV pumps can be equipped with the Cameron Shaft-Seal - completely eliminating your stuffing box problems.

Part of a complete line of I-R pumps for the processing industries, the CRV is built in sizes from 1 to 6 inches, for capacities to 2600 gpm and heads to 500 feet. Ask your I-R representative about the real economy that these pumps can bring to your processes.

Ingersoll-Rand

11 Broadway, New York 4, N. Y.

714-10

Pumps, Compressors and Vacuum Equipment for the
Process Industries



When inquiring check CP 2571 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Rapid, efficient heat absorption assured by cooling/volume ratio in boiler . . .

results in less slag formation and aids in minimizing furnace maintenance

Uses: Steam generating unit is designed to meet demand for standardized boilers operating in the medium pressure range (up to 250 psig) and for steam capacities from 4000 to 30,000 lb per hr.

Features: Package Boiler, Type VP, is said to have a higher ratio of furnace-wall cooling to furnace volume than any other boiler of its size and type. This feature assures rapid and efficient heat absorption and lower gas temperatures entering the convection bank. It also results in less slag formation and aids in minimizing furnace maintenance, according to manufacturer.

Description: Boiler is designed for pressure firing of oil or gas either alone or in combination. It is completely shop-assembled, ready for shipment as a unit with firing equipment, setting, forced-draft fan, and automatic control. For oil firing, steam-assisted, mechanical-atomizing burners are used; ring-type burners are furnished for gas firing. Either type of burner may be added to the air register at any time. Oil pump and heater sets are included with oil burners as standard equipment.

Through use of a centrifugal-type forced-draft fan, VP boiler is said to operate more quietly than those units employing typical high-speed blowers. Since this fan supplies air to the furnace at a pressure high enough to overcome draft loss through the unit, neither a high stack nor an induced-draft fan is required. Omission of induced-draft fan results in a reduction of noise and eliminates maintenance required by such a fan.

Complete automatic control system is supplied as standard equipment with VP boiler. It adjusts air and fuel supply in proper proportion to needs of fluctuating loads. It also supplies protection from flame failure, excessively high steam pressure, and low water level.

Since the VP boiler is completely shop-assembled, it can be skidded or lifted from a railroad car or truck onto a simple foundation, such as a concrete slab or a level floor. Lifting lugs are provided so that it may be readily unloaded and handled by a crane. Installation can be completed in a few days after delivery. Unit is compact, requiring a minimum of floor space and head room.

(Type VP boiler is a product of Combustion Engineering, Inc., Dept. CP, 210 Madison Ave., New York 16, N. Y. . . . or for more information check CP 2572 on handy Reader Service slip between pages two and three.)

Nomograph on page 172
allows fast estimation of
conveyor belt capacity.

For Precision Processing Equipment call PROCTOR ENGINEERS



You're on the right line when you call Proctor engineers for precision processing equipment. By so doing you avail yourself a breadth and depth of experience that is virtually unequaled in in any other single equipment manufacturer.

The result—carefully designed, well built equipment that will meet *precisely* the need for which it is created.

Proctor project engineered equipment is operating today in all branches of the process industries—heavy chemicals, pharmaceuticals, food, leather, tanning, synthetic textiles, rubber manufacturing, plastics and many more.

With their wide range of experience in building individually designed drying and fiber processing machinery—Proctor engineers are well equipped to apply their skill to developing, engineering and manufacturing *other processing machinery*. This machinery may be related to drying equipment and used in the same range—or it may be totally unrelated but require the same basic kind of engineering and manufacturing skill.

Call Proctor engineers—it is the shortest way to the surest solution to your processing equipment problem.

**PROCTOR
CREATIVE ENGINEERS
AT WORK**

NOW IT'S PROCTOR FOR SPRAY DRYING

Proctor creative engineering has broadened its horizons—with its entrance into spray drying. The decision to extend Proctor service to include spray drying is in direct response from customers and other manufacturers who have worked with us—or recognize the work we have done over many years in atmospheric drying.

William M. Clelland, who is widely known for his work in spray drying is associated with Proctor & Schwartz and will head this work.

Proctor engineers' background of association with the process industries—combined with Mr. Clelland's experience make this move a natural one.

Proctor & Schwartz offers this advantage over any other manufacturer of spray drying equipment . . . they know and have worked with atmospheric drying and infra-red freeze drying, so that if the requirements of your product indicate any one of these processes—we are fully equipped to serve your best interests.

Proctor engineers are ready, willing and able to discuss your drying requirements, study your product and make intelligent recommendations.

Let us hear from you as soon as you know that your product must be dried. Early consideration will result in substantial savings.

PROCTOR & SCHWARTZ, INC.
633 Tabor Road • Philadelphia 20, Pa.

CREATIVE ENGINEERS AND MANUFACTURERS OF PRECISION PROCESSING EQUIPMENT

When inquiring check CP 2573 on handy form, pgs. 2-3

ODS Slurry Pump



... protects friable crystals against degradation

AND here's some proof that the ODS does protect against crystal spoilage... proof of the relatively gentle handling of crystalline products by the ODS Diaphragm Slurry Pump which in this case is grainer salt.

Screen Mesh	Salt at Grainer Discharge	Salt After ODS Pump*	Salt After Centrifugal Pump*
10	10.2%	11.4%	1.6%
14	17.8%	18.3%	7.3%
20	15.6%	17.7%	9.8%
28	22.0%	24.6%	11.5%
35	14.9%	14.6%	20.6%
48	10.0%	7.6%	18.6%
65	5.4%	3.1%	11.2%
100	2.2%	1.0%	6.0%
-100	1.9%	1.7%	3.4%

*Note that both pumps had a 160 foot carry and a 45 foot lift. Note also, that in certain sizes, there was actually a measurable increase in crystal size resulting from the ODS brine cooling effect.

If degradation of crystalline size and structure is important when the slurry in your process is handled, you certainly should check on the merits of the ODS Pump. Even if crystal degradation is not an important factor, other advantages will appeal to you... advantages such as low maintenance, no mechanical linkage to the diaphragm, no weakening holes in the diaphragm, no clogging of the valves. Write or call our nearest sales office.



308-R & 309-R

Bulletin 309-R gives full details of the ODS Pump. Shall we send you a copy?

If you are handling clear chemical solutions of any type, hot or cold, our Olivite Acid Handling Pump will probably serve you best. Shall we send you a copy of Bulletin 308-R?

WORLD WIDE SALES, SERVICE AND MANUFACTURING FACILITIES

OLIVER UNITED FILTERS

NEW YORK 36 - 33 West 42nd Street • CHICAGO 1 - 221 North LaSalle Street
OAKLAND 1 - 2900 Glascok Street • SAN FRANCISCO 11 - 260 California Street
Export Sales Office - New York • Cable - OLUNIFILT



FACTORIES:
Hawtlen, Pa.
Oakland, Calif.

When inquiring check CP 2574 on handy form, pgs. 2-3

CONSTRUCTION

Off-center firing featured on industrial boiler

Uses: For users of boilers in sizes through 250 hp.

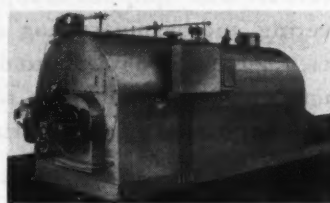
Features: Principle of off-center firing on boiler is said to deliver advantages in performance, economy, and safety, including efficient, positive water circulation in a rotary motion.

Description: Off-center firing location provides a higher column of water over hot furnace, which is said to increase safety and protect boiler against low-water damage. Steaming is faster with elimination of surging and priming. Design also helps maintain a steady water line even when taking a full head of steam off boiler.

Unit has three-pass, modified Scotch Internal Furnace-Type steam generator which includes a one-piece welded boiler shell, X-ray inspected to meet all requirements of the ASME code. All models are built with a large steam storage space and five or more sq ft of water heating surface per rated hp.

An induced draft fan pulls gases through boiler, providing quiet clean, safe operation and eliminating the need for a high stack. Secondary air is induced through stainless-steel air ring, creating a rotary turbulence in furnace which produces intense fire over entire heating surface, according to manufacturer. Operation is fully automatic with approved electronic flame failure safeguards.

In appearance, boiler is streamlined, with removable side panels neatly covering the base and serving as additional insulation. Unit is com-



Firing design gives positive water circulation in rotary motion

pletely packaged and tested at factory, delivered ready to make service connections. Burners are available for gas only, light oil only, heavy oil, or with gas and light oil combination for quick conversion according to need.

2 of the 5 Neff & Fry Silos at Detroit Stoker Co.

These two 20' x 55' Neff & Fry Silos are used for handling coal at the Detroit Stoker Company's Monroe, Mich., plant. Three others, each 14' x 40', are used for handling foundry sand. As usual, we collaborated with the machinery manufacturers in designing the conveying equipment.

If everyone understood the advantages of Neff & Fry Silos, several other types of bins for handling flowable bulk materials would not be purchased. As a hint, we point out a few facts: 1. The walls of our silos are only 2½" thick, making the interior capacity relatively great in relation to outside diameter; 2. Our silos do not spall, rust, rot, or burn; 3. Our silos have such vertical strength that heavy machinery is mounted on them without extra supports.

The why's are explained in our folder, "Bins With the Strength of Pillars." Read it. A copy will be sent upon request.

THE NEFF & FRY CO. • 166 Elm St. • Camden, Ohio

NEFF & FRY ▶ SUPER-CONCRETE STAVE STORAGE BINS

When inquiring check CP 2575 on handy form, pgs. 2-3

BRIEFS...

from contemporary publications

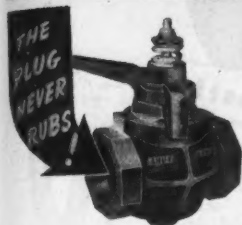
READ THEM... IN THIS ISSUE

You get a "quick look" at the most valuable articles being published in this field, and kindred fields... by reading the "BRIEFS" section of **CHEMICAL PROCESSING** every month.

Our Editors read more than 50 contemporary publications every month... select those articles they believe you will want to know about... and, in terse style, they tell you about them. Name of publication and issue are given so you can read those you want to know more about.

It's a monthly service... to save you time... yet keep you informed. See "BRIEFS" in this issue, page 116.

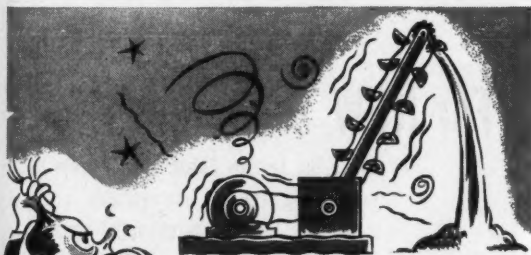
FRICTION-FREE DeZURIK VALVES



DeZurik Easy-Operating Plug Valves offer 100% friction-free service on any line. In opening the valve, the slightest movement of the lever lifts the rubber plug-face entirely free of the eccentric valve seat; completing the quarter-turn swings the plug out of the way — smoothly, easily, **WITHOUT FRICTION!** The plug-face does not come into contact with **ANY PART** of the valve body except at the moment of closure. No friction means no binding or scoring; there's no lubrication needed, and virtually no maintenance. Get the complete story on DeZurik Easy-Operating Plug Valves in all sizes and metals. Write for data.

DeZURIK SHOWER CO.
SARTELL, MINNESOTA

When inquiring check CP 2576 on handy form, pgs. 2-3



Take the "JERKS" out

Are you tearing your hair out—Smoking, "killing" motors? Breaking drives? Overloaded circuits? Lugging, stalling engines? Damaged equipment? Excessive maintenance?

Then it's time to take the "jerks" out with Twin Disc's power-smoothing **HYDRO-SHEAVE®** Drive. Call your Twin Disc Hydraulic Dealer today—ask for Bulletin 145-B.

HYDRO-SHEAVE Drive—The Hydraulic Coupling unit for motors or engines, 1/2 to 50 hp.



TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES

TWIN DISC CLUTCH COMPANY, Rolling, Wisconsin • HYDRAULIC DIVISION, BOSTON
BRANCHES: CLEVELAND • DALLAS • DETROIT • LOS ANGELES • NEWARK • NEW ORLEANS • SEATTLE • SIOUX FALLS

When inquiring check CP 2577 on handy form, pgs. 2-3

CONSTRUCTION

Units are available in capacities ranging from 25 to 250 hp.

(Product of Dutton Boilers, Div. of Hapman-Dutton Co., Dept. CP, Kalamazoo, Mich. . . or for more information check CP 2578 on handy Reader Service slip, pages two and three.)

Self-contained, hydraulic weighing unit is portable . . .

accurate to 0.1% of scale

Uses: Portable weighing systems are said to permit laboratory-accurate force measurement anywhere in the plant or on the job.

Features: Self-contained, portable, hydraulic weighing units are accurate to 0.1% of scale.

Description: Portable units are available in 24 ranges from 0-500 lb to 0-100,000 lb. There are four load-cell sizes with a choice of 8½, 12, and 16" indicators.



Portable unit has range to 50 tons

Each unit contains a load indicator mounted directly on a hydraulic force-measuring cell. Construction makes it rugged enough to stand up under the roughest in-the-field handling, according to manufacturer. Accuracy in use is guaranteed to be within 0.25% of full scale — within 0.1% of scale when shipped.

Fully calibrated custom assemblies incorporating other accessories and providing ranges as high as 0 to 10,000,000 lb are available.

(Product of The A. H. Emery Co., Dept. CP, New Canaan, Conn. . . or for more information check CP 2579 on handy Reader Service slip, pages 2 and 3.)

The OLIVITE Acid-Handling Pump is really 2 pumps in one!



Yes, many chemical plant operators have come to regard the Olivite Pump as two pumps in one . . . one, an efficient centrifugal pump for handling liquids; the other, a durable pump with high resistance to corroding solutions.

In one large chemical plant with extensive acid-pumping operations, more than 100 Olivite Acid-Handling Pumps are now in service. They are handling several different solutions, both hot and cold, with widely varying pH values.

Thousands of these corrosion resistant and leak-resistant pumps have been supplied to industry through the years. Chances are the Olivite could fit very nicely into your pumping operations. Write for our Bulletin 308-R, which gives complete information. When you do, please give full details of your pumping problems.

It is possible you may also be interested in the ODS Diaphragm Type Pump which gives excellent results in pumping solutions as well as slurries. Bulletin 309-R gives full details.

WORLD WIDE SALES, SERVICE AND MANUFACTURING FACILITIES

OLIVER UNITED FILTERS

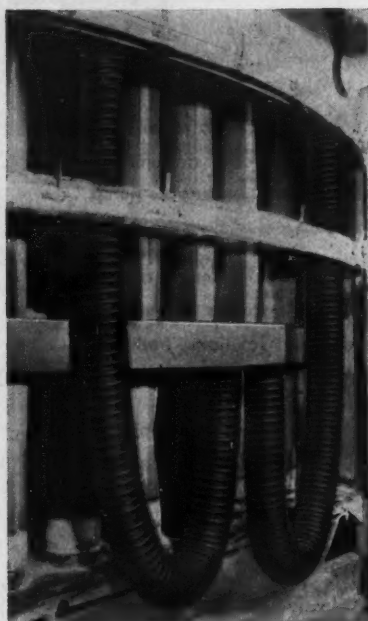
NEW YORK 36 — 33 West 42nd Street • CHICAGO 1 — 221 North LaSalle Street
OAKLAND 1 — 2900 Glascock Street • SAN FRANCISCO 11 — 260 California Street
Export Sales Office — New York • Cable — OLUNIFIL



FACTORIES:
Hastoken, Pa.
Oakland, Calif.

When inquiring check CP 2580 on handy form, pgs. 2-3

Maintenance Engineers responsible for dust and fume removal — air handling should know about — **SPIRATUBE®**



You're missing a good bet, if you haven't discovered the many advantages of Spiratube for all ducting systems. Lightweight Spiratube, the flexible ducting, costs less to install in both dollars and production down-time, for you can install it yourself — move it where you need it! Spiratube connects quickly and easily to present lines — bends anywhere. No turn is too short, no angle too acute. No elbows or special fittings to bother with in going around obstructions.

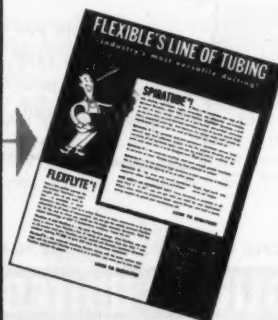
Standard sizes with various fabrics and coatings for all requirements are immediately available from well-stocked distributors — coast-to-coast.

◀ SPIRATUBE application in travelling blow ring assembly at B. F. Goodrich Chemical Company Plant, Louisville, Kentucky.

write today for full details
on Flexible's amazing
cost-saving ducting

**Flexible
Tubing**

CORPORATION
Gulfport, Connecticut Pasadena 1, California



CONSTRUCTION

Hand-portable welder has heat range to 200 amp

Uses: Unit is said to weld any metal up to extra thick steel plate.

Features: Hand-portable electric arc welder has a heat range of 15 to 200 amps and more, according to manufacturer. It is reported to be flexible in use and purpose.

Description: Welder is lightweight and is easily hand-carried from job to job. It needs only to be plugged into a 110/220 AC outlet and it is ready for work. Electrodes used are from 3/64" to and including 5/32". Specifications show a compact 10 1/2 inch length, 7 inch width, and 6 1/4 inch height.

Said to be absolutely shock-free even to the most inexperienced operator, one may weld, braze, solder, cut, or preheat using either the metallic arc or carbon arc method with the welder.

(Product of Royal Equipment Corp., Dept. CP, 906 Main St., Burbank, Calif. . . . or for more information check CP 2582 on handy form, pages 2 and 3.)

Corridor illumination is improved by use of angled fixture

Wide halls and corridors being characteristic of modern offices, this fixture is said to have been designed to take care of those asymmetrical lighting requirements. Sidewise illumination is very broad, whereas lengthwise, brightness is well shielded by means of 45° x 45° plastic louvers.

In a 10' wide hall, anywhere from 5 ft candles to 20 ft candles can be distributed across the entire



Photo shows side and end views
of corridor fixture

width with perfect uniformity, according to manufacturer. Fixture is available in 4, 8, and 16' lengths, in 1 or 2 rows of lights.

(Product of The Edwin F. Guth Co., Dept. CP, 2615 Washington Ave., St. Louis 3, Mo. . . . check CP 2583 on form, pages 2 & 3.)

LEAKPROOF CHECK VALVES

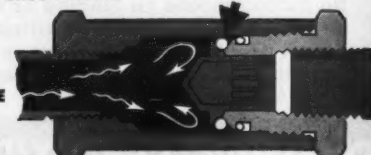
At Last!

THE "CIRCLE-SEAL" PRINCIPLE

utilizing a resilient "O" ring floating between conical seats enables us to provide "dead-tight" sealing — plus the assurance of unprecedented, maintenance-free service life and precision performance never before offered.

CIRCLE SEAL precision check valves

- VACUUM BREAKERS
- SENSITIVE LOW PRESSURE VENT OR RELIEF VALVES



JAMES-POND-CLARK
2181 E. Foothill Blvd. • Pasadena 8, Calif.

Engineering data sent free of charge on request.

When inquiring check CP 2584 on handy form, pgs. 2-3

For NEW Techniques...

Now...the famous Eimac high-vacuum pump type HV-1 is available for unrestricted uses



This high speed oil-diffusion type pump was designed by Eitel-McCullough to meet the most exacting of production-line requirements...the evacuating of radio transmitting tubes. It is now available in any quantity regardless of the field of endeavor... whether nuclear science, research, or material processing. Consider these outstanding features:

- ★ Ultimate Vacuum 4 x 10⁻⁷ mm Hg.
- ★ Speeds up to 67 Liters/Second
- ★ Clear Glass Pump Barrel
- ★ No Liquid Cooling
- ★ No Charcoal Traps
- ★ No Mechanical Wear
- ★ Maintenance without Special Tools or Skill
- ★ Simple Pipe Flange Vac-System Connection

Eimac
HV-1
VACUUM PUMP

Complete data sent on request.

EITEL-McCULLOUGH, INC.
2251 SAN MATEO AVENUE • SAN BRUNO, CALIFORNIA

When inquiring check CP 2585 on handy form, pgs. 2-3

When inquiring check CP 2581 on handy form, pgs. 2-3

Two-cycle, gas-engine-driven compressor unit has a turbocharger . . .

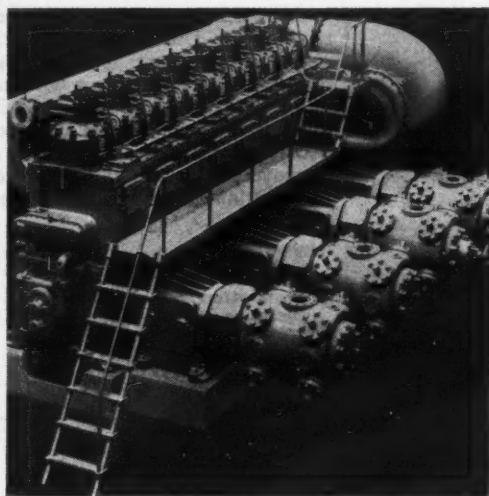
has 50% more power than comparable units — uses less fuel

Uses: As a compressor unit.

Features: This two-cycle, gas-engine-driven compressor which is turbocharged, has the following features, according to manufacturer: 50% more power than any unit of comparable bore and stroke; less fuel consumption; 25% less water cooling load; flat fuel consumption curve; quieter operation; and compact yet accessible 2-cycle in-line design.

Description: Model TRA-8 compressor, which develops 1320 brake hp, has 8 vertical, in-line cylinders of 14" bore and 14" stroke, integrally connected to horizontal compressor cylinders.

It is stated that turbocharger and compressor have been specifically designed and built to operate as a perfectly matched, balanced unit. Turbocharging as incorporated in unit is a method of converting waste heat into energy. This is done by using the waste heat, velocity, and mass flow of the exhaust gases to drive a radial inflow turbine. The turbine, in turn, is connected to a centrifugal compressor. Com-



Unit has simple, compact, accessible "angle" design which incorporates turbocharger

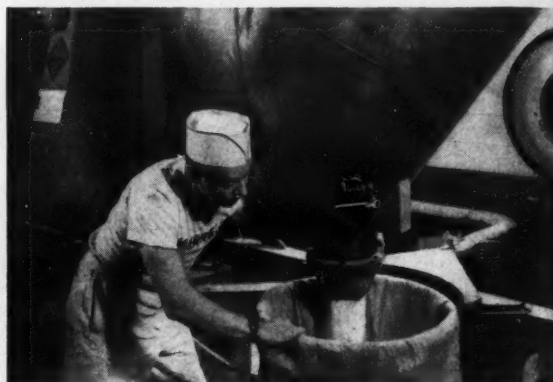
pressor pumps air for scavenging the power cylinders and also provides air for combustion. Thus, no scavenging cylinders are required.

Unit has cylinder block construction with removable power cylinder liners; precision bearings; one-piece forged steel crankshafts; oil-cooled power pistons; long, forged steel connecting rods; a built-in water pump; and many other features that give a prolonged, trouble-free life with minimum degree of maintenance, according to manufacturer.

(Product of Clark Bros. Co., Div. of Dresser Industries, Inc., Dept. CP, Olean, N. Y. . . or for more information check CP 2586 on handy form, pages 2 and 3.)

The
Wm. S. Merrell Company
says:

"p-k twin shell blender
DOUBLED
productive capacity"



Easy loading of p-k twin shell blender is done from special elevated loading platform.

Technician at the Wm. S. Merrell Company, Cincinnati pharmaceutical manufacturer, unloads compound from a p-k twin shell blender. Shown is unique dust collecting nozzle, used to draw dust into piping to outside air-filtering plant.



"The p-k twin shell blender not only doubled our productive capacity, but also further assured us of a complete mixing and blending process. This is essential to provide uniformly accurate dosages of all Merrell pharmaceuticals," states Mr. Frank J. Messmann, Director of Production and Purchasing of The Wm. S. Merrell Company, Cincinnati.

Keeping Merrell pharmaceuticals absolutely free of contamination is a major requirement, successfully met by a p-k twin shell blender with a special dust control collection sys-

tem. The unique dust control system draws dust through pipes to an air-filtering plant outside the main building.

p-k twin shell dry blenders are fast and thorough, provide critically uniform blending along with quick cleaning. Because p-k manufactures many kinds of blenders—ribbon, double cone or the twin shell—you can be assured of the right blender for your needs. Write now for Catalog No. 12 giving complete engineering data or send samples of materials for analysis of blending.

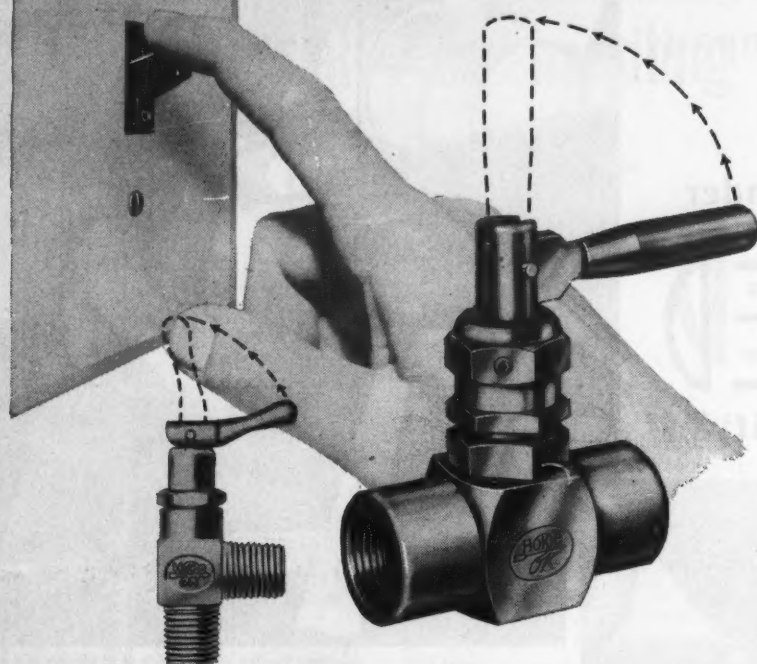
the **Patterson-Kelley Co., inc.**

770 Lackawanna Ave., East Stroudsburg, Penn.

181 Park Avenue, New York 17 • Railway Exchange Building, Chicago 4 • 1700 Walnut Street, Philadelphia 3 • 96-A Huntington Avenue, Boston 16 • and other principal cities

When inquiring check CP 2587 on handy form, pgs. 2-3

FOR Fingertip FLUID CONTROL



HOKE TOGGLE VALVES

Opened or closed with a single, positive motion—like a light switch—these HOKE toggle valves will improve the design of your instrument panel or test stand. Use them to control gas or liquid, at pressures up to 1000 psi or in high vacuum, with no leakage through stem or seat. They are available in $\frac{1}{8}$ ", $\frac{1}{4}$ ", $\frac{3}{8}$ " and $\frac{1}{2}$ " sizes, in brass or stainless steel. The seat material, normally synthetic rubber, may be altered to meet specific conditions. Both straight line and angle type are ideal for instrument panel installation and can be mounted easily and securely with a lock nut. Several types are available with plastic knobs of various colors, for quick identification of fluids. For fingertip fluid control—for time-saving, dependable, efficient performance—specify HOKE Toggle Valves. Write Hoke Inc., 145 S. Dean St., Englewood, N.J., for Catalog & Data Sheets.



**HOKE
INCORPORATED**
Fluid Control Specialists
ENGLEWOOD, NEW JERSEY

When inquiring check CP 2588 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

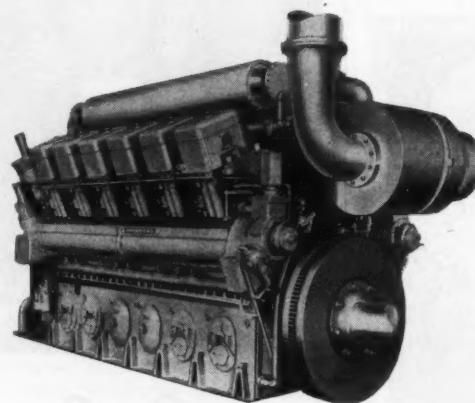
Simplicity of construction plus small dimensions featured by versatile engines . . .

designed for diesel, Dualfuel, or spark-fired gas operation

Uses: In stationary power applications, for pipeline pumping, and generating service where moderate weight and small physical dimensions are advantageous.

Features: Simplicity of cylinder construction. Removable cast iron liners seat in individual cast iron jackets. This construction permits directed flow of water for more efficient cooling, according to manufacturer. Entire cylinder assembly is easily removable without disturbing cylinder liner water seals. For maximum cooling, exhaust and intake valves are seated directly in cylinder head. Cooling water flows from cylinder jacket to head through accessible outside connections. This eliminates use of grommets and special gaskets.

Engines are designed and built for liquid fuel, Dualfuel, or spark-fired gas operation. As a diesel, engine is said to burn a wide range of fuel and crude oils. For Dualfuel operation, engine burns various types of



Four-cycle, 12 cylinder, V-type diesel engine, rated at 3200 hp at 600 rpm

gaseous fuels with only a small percentage of pilot oil to control combustion. In case of any interruption of gas supply, engine will automatically change to liquid fuel without affecting speed or load. As a spark-fired gas engine, it will burn natural gas, butane, propane, manufactured gas, and sewage gas using a dual spark ignition system.

Description: Engines are built in 12 or 16 cylinders of 13" bore and $16\frac{1}{2}$ " stroke covering a range from 2400 to 4260 hp at 450 to 600 rpm.

In this V-type engine the included angle of the two banks of cylinders is 45° and the offset between cylinders working on each crankpin is $4\frac{3}{4}$ ". Net weight of 12 cylinder engine is 96,000 lb and of 16 cylinder engine, 122,000 lb. This does not include weight of flywheel and extension shaft on stationary engines.

Inlet air manifold and single duct exhaust manifold are located directly under intercooler housing. Inter-

Would you like
to receive
**CHEMICAL
PROCESSING**
personally?

It will be sent to you
without charge or
obligation . . .

. . . if you qualify
. . . if you request it

If you are responsible for processing operations in an administrative capacity as plant superintendent, chemical engineer, chemist, engineer or equivalent responsibility . . . in a plant of substantial operations* where chemical processing is an important factor . . . **CHEMICAL PROCESSING** will be sent to you without charge or obligation if you request it. Use form below. In requesting, be sure to answer all questions. If your firm is not rated or listed in standard references, indicate size of the company by capacity, annual sales or number of employees. Unless all information is given, magazine will not be sent.

*"Substantial operations" does not necessarily mean an extremely large plant. But requests for the magazine exceed supply so we must set standards to insure publication being sent where it can be used to best advantage.

CHEMICAL PROCESSING
111 EAST DELAWARE PLACE
CHICAGO 11, ILLINOIS

Please send me **CHEMICAL PROCESSING** without charge or obligation

Name	_____
Title	_____
Company	_____
Rating of Company	_____
Street	_____
City	_____ Zone _____
State	_____
Main Products	_____

CHEMICAL PROCESSING

cooler, of the two-pass type, extends full length of engine. For stationary application, turbocharger is positioned on free end of engine.

All moving parts of engines are pressure lubricated. With this system, rotary type lubricating oil pumps are driven by roller chain from end of crankshaft. Oil flows under pressure through strainers, filters, and coolers to an oil header located in bedplate of engine. From oil header, individual oil lines lead to each main bearing cap, gear compartment at each end, camshaft bearings, and valve levers.

Fuel systems on engine are designed for minimum maintenance and best overall efficiency depending upon type of operation. For oil operation, a constant-stroke fuel injection pump of the variable cut-off type is mounted on camshaft housing adjacent to the cylinder it serves. Easily removed fuel nozzle holders are located in the center of cylinder head and are provided with spring loaded valves and multiple hole tips.

For Dualfuel operation a hydraulically actuated gas admission valve is mounted on cylinder head. A similar valve is also employed on spark ignition engine. In addition two spark plugs are used per cylinder and low tension impulse generators, rectifiers, and transformers are used to assure dependable and complete combustion. Hydraulic relay-type over-speed and control governors are mounted at flywheel end of each engine type.

(Superairthermal V-type engine is a product of Nordberg Mfg. Co., Dept. CP, Milwaukee 7, Wis. . . . or for more information check CP 2589 on handy form, pages 2 and 3.)

Glass container forming machines shut down less with use of mold spray oil . . .

designed to keep blank molds properly coated and cleaner — longer

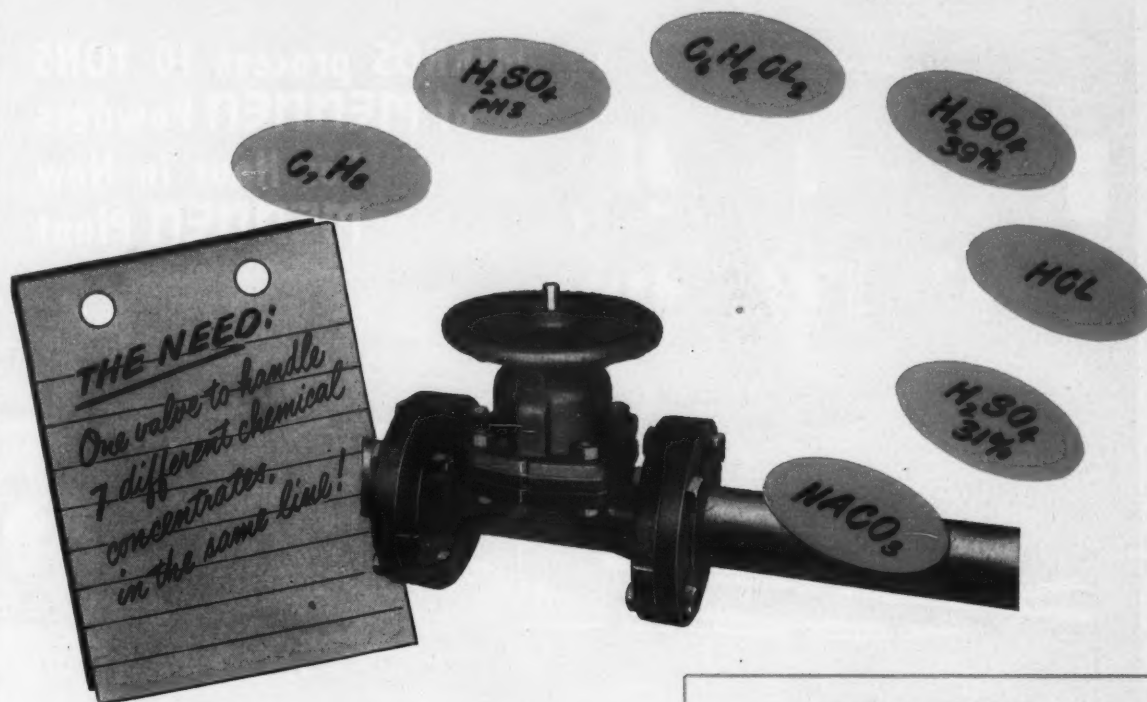
Uses: For use on high-speed glass container forming machines. Compound can also be used as a concentrate or additive for blending with straight mineral oil stocks when spray oils with lower concentrations of colloidal graphite can be used satisfactorily. It is also suitable for general use as a lubricant on glass forming machines where a low viscosity oil containing colloidal graphite is required.

Features: Oil compound is designed to keep the blank molds used in glass container forming operation properly coated and cleaner for longer periods of time, adding to efficiency and reducing shutdowns, according to manufacturer.

Description: Product contains colloidal graphite, other additives, and the proper petroleum oil. These are formulated in effective percentages to maintain a uniform coating of carbon on the blanks, without excessive buildup of deposits, for long periods and over a wide range of operating temperatures.

(Moldgloss A is a product of Gulf Oil Corp., Dept. CP, 2800 Gulf Bldg., Pittsburgh 20, Pa. . . . or for more information check CP 2590 on handy form, pages 2 and 3.)

TROUBLE multiplied by 7



A manufacturer was looking for one valve which would handle seven chemicals of varying temperatures and concentrations, one after another, in the same line. They were . . .

SODIUM CARBONATE	PH 9	90°C
HYDROCHLORIC ACID	8%	100°C
SULPHURIC ACID	PH 3	20°C
SULPHURIC ACID	39%	42°C
SULPHURIC ACID	31%	15-20°C
TOLUENE	(Full strength but associated with traces of other chemicals)	
ORTHODICHLOROBENZENE — Cleaning Solvent		

Valves suitable for use with these chemicals individually were available. But only one valve was found which could handle them in combination. It was the Grinnell-Saunders Diaphragm Valve, glass lined, with chemically inert KEL-F Diaphragm. The Grinnell KEL-F diaphragm not only prevented the liquid from attacking working parts, but it eliminated leakage around the stem.

Piping in today's complex industrial plants is an exacting science involving the handling of highly corrosive fluids, gases, compressed air, beverages, foods and suspended solids . . . in lines where corrosion, abrasion, contamination, clogging, leakage and maintenance are costly factors. Under such conditions, the amazing adaptability of the Grinnell-Saunders Diaphragm Valve explains its acceptance by industry after industry. For further details, write for Grinnell-Saunders Diaphragm Valve Catalog.

GRINNELL

WHENEVER PIPING IS INVOLVED

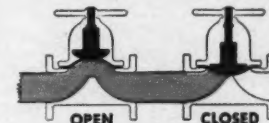


Grinnell Company, Inc., Providence, Rhode Island

pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermoflex unit heaters • valves
Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies
industrial supplies • Grinnell automatic sprinkler fire protection systems • Amco air conditioning systems

Coast-to-Coast Network of Branch Warehouses and Distributors

When inquiring check CP 2591 on handy form, pgs. 2-3



Features which have made Grinnell-Saunders Diaphragm Valves the specified valve in many different industries:

Streamlined flow. Smooth, streamlined passage, without pockets. Frictional resistance at a minimum.

Leak-tight closure against grit, scale, suspended solids.

Working parts absolutely isolated from fluid. Diaphragm completely seals off working parts from fluid in the line.

Body, lining and diaphragm materials to meet service condition. Bodies stocked in cast iron, malleable iron, stainless steel, bronze and aluminum; other materials on special orders. Valve bodies lined with lead, glass, natural rubber or neoprene. Diaphragm materials of natural rubber or synthetics.

Minimum maintenance. No refacing or reseating is required. No packing glands to demand attention. New diaphragm can be inserted without removing valve body from the line.

UNTOUCHED BY HUMAN HAND

MIKROS process 10 TONS
of MENNEN Powders
Per Hour in New
MENNEN Plant



The name of Mennen stands for quality. So does the trade name MIKRO. It was only logical then, that the two should inspire the creation of a continuous processing system unique in the field of cosmetics, at the new Mennen plant in Morris Township, N. J. The MIKRO-designed process gave Mennen precisely what they wanted—extreme cleanliness and freedom from dust and contamination in grinding, blending and packaging. Material is moved through the MIKRO Air Conveying System so smoothly and automatically that the human hand need only push buttons.

The grinding and blending is done by four No. 2TH MIKRO-PULVERIZERS whose product reveals its finely ground and blended texture under a strong microscope.

Two MIKRO-COLLECTORS*, each containing 8, felt filter cylinders vent every unit in the system, while maintaining uniform pressure. Their phenomenal filter rates insure high capacity and complete product recovery, along with freedom from dust.

Thus the MIKRO method has given The Mennen Company not only the high quality they demand but peak production with economy in manpower, motorpower and maintenance.

WRITE FOR illustrated descriptive literature.

*Patents Applied For by H. J. Hersey, Jr. and Pulverizing Machinery Company

PULVERIZING MACHINERY COMPANY
60 Chatham Road • Summit, New Jersey

PRESERVE OUR HERITAGE: FAITH, FREEDOM AND INCENTIVE



When inquiring check CP 2592 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

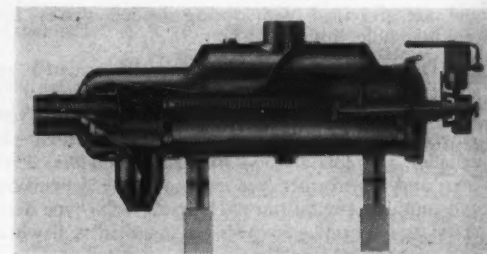
Time saved by self-cleaning fluid strainers for large volume liquid lines . . .

three to five minutes and unit is clean — with no mess or time-consuming labor

Uses: Serviceable as fluid strainer for large volume liquid lines.

Features: Unit is self-cleaning. Rotating jets, mounted integrally within strainer, remove trapped solids in 3 to 5 min. Job is done without opening strainer housing — thus, no mess or time-consuming labor, according to manufacturer.

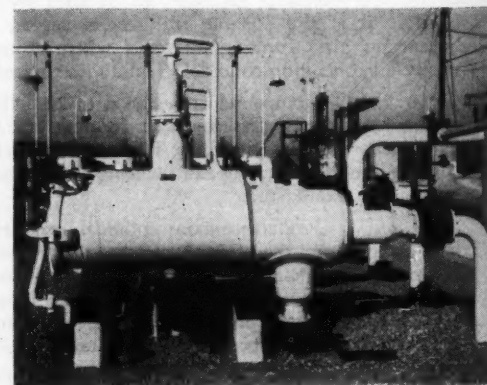
Description: Strainer utilizes a Monel wire mesh screen reinforced by and spot-welded to a sturdy Monel back-up. Screens of any desired mesh from 100 to 400 may be used, depending upon degree of



Cutaway view of strainer unit shows inlet on left, perforated Monel back-up and wire screen, and to the right (within the unit) removable jet nozzles are mounted on revolving arm

cleanliness required in product. Field performance data indicate that a two hundred mesh screen will effectively remove most solids; however, since cleaning operation takes only a few minutes, the use of finer mesh screens requiring more frequent cleaning is practical.

Cleaning of unit is necessary when pressure-differential between input and output lines reaches a predetermined pressure. A recording instrument eliminates guesswork in this operation and also provides a day-by-day record of various strainer operations. For cleaning operation, inlet and outlet lines are



Horizontal unit as it appears on-the-job

CONSTRUCTION & MAINTENANCE

closed. Valves are opened on drain, air vent, and cleaning fluid line. A small motor is started to rotate jet-cleaning pipe inside strainer. After one minute of cleaning, sequence of operations is repeated in reverse order.

Because of this rapid, self-cleaning feature, it should never be necessary to by-pass the product during cleaning operation or while strainer elements are being replaced. Two-bolt closure facilitates access to strainer for inspection and installation of different mesh baskets.

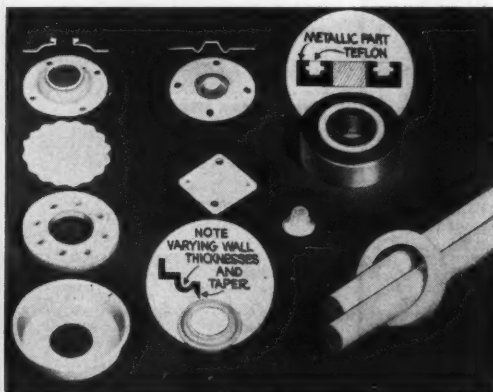
Pressure differential gage and recorder, and selector and starting switches are installed on a centrally located control panel. Strainer operation can be made fully automatic with use of proper electronic equipment.

Both horizontal and vertical type strainers are available. The horizontal model is designed to handle a large fluid volume — vertical model is for smaller volumes and may be fitted into existing piping to replace conventional strainers.

(Product of Thornhill-Craver Co., Dept. CP, P.O. Box 1184, Houston, Tex. . . . or for more information check CP 2593 on handy Reader Service slip, pages two and three.)

Molding techniques allow broader Teflon applications

Recently developed molding techniques have enabled one firm to mold DuPont's "Teflon" fluorocarbon in varying wall thicknesses, tapers, and undercuts formerly thought impossible for that material. Illustrated here are production molded diaphragms, spiral



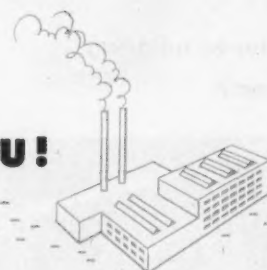
washers, discs, seals, and cup seals, representing achievements in wall thicknesses of 0.047 to 0.031" and (upper right) a Teflon insert in brass. Stock rods, tubing, and sheeting are also produced by this firm specializing in Teflon.

(Products of The Sparta Heat Treat Co., Plastics Div., Dept. CP, East Sparta, Ohio . . . or for more information reader may simply check CP 2594 on convenient Reader Service slip between pages two and three.)

THE LABORATORY USES PORCELAIN



SO CAN YOU!



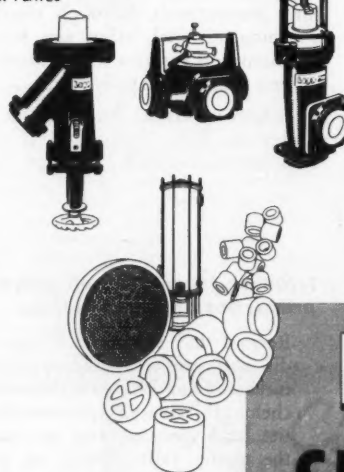
In putting new processes into production, there's no need to compromise with purity because industrial-scale equipment won't duplicate laboratory results . . . Nor to search for substitute materials that will produce equivalent results. Why not use the same materials in which the laboratory worked out the process?

Chemical Porcelain, world-wide standard for laboratory purity, is available from Lapp in equipment for pilot-plant and industrial production. In a wide variety of valve styles, in pipe and fittings, in towers and raschig rings, and many special shapes. It costs much less initially than special alloy or lined equipment, and, even in cases of most severe acid corrosion, usually requires no maintenance.

If you're unusually concerned about protection of product, plant, or personnel against accident or carelessness, specify Lapp Chemical Porcelain with TUFCLAD armor (multiple layers of heavy fiberglass fabric bonded with an Epoxide resin). TUFCLAD serves as protection against impact, insulation against thermal shock—and is of itself strong enough to hold operating pressures even if porcelain is cracked or broken.

For severe corrosion service, or where no metallic contamination can be tolerated, join the hundreds who have found Lapp Chemical Porcelain the only satisfactory—and most economical—processing material.

ANGLE AND Y-VALVES 1/2" TO 6"
PLUG COCKS 1", 1 1/2", 2"
FLUSH VALVES FOR 3", 4", 5"
TANK OUTLETS
PIPE AND FITTINGS 1/2" TO 8"
TOWERS 12", 18", 24"
RASCHIG RINGS 3/4" TO 3"
TOWER PLATES



Lapp

CHEMICAL PORCELAIN

WRITE for description and specifications. Lapp Insulator Co., Inc.,
Process Equipment Division,
161 Wendell St., Le Roy, N. Y.



When inquiring check CP 2595 on handy form, pgs. 2-3

TO THE INGENUOUS

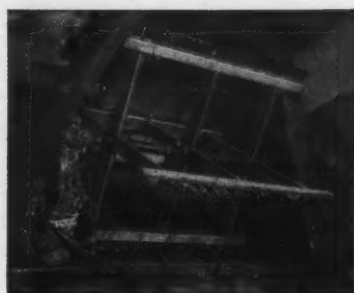
Not familiar with this

NEW INDUSTRIAL TOOL

Free Sample of Fullergript Brush Strip

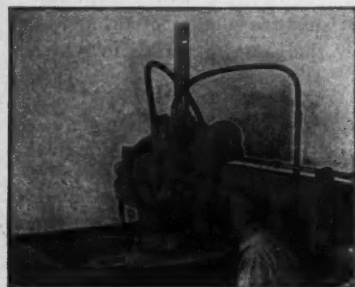
What problems can you solve by adapting Fullergript to your equipment?

This brush strip can be coiled or twisted into numerous shapes. It can be formed to give intermittent or continuous brushing action. It adapts to stationary or power driven applications. How it may help you is a matter of your own



Recovering 1000 Pounds of Raw Wool Each Week from Sewer

ingenuity — plus the services of the Fuller Brush Engineering Dept. Find out what Fullergript can do by sending for a sample strip. We will also send a booklet showing its versatility. Simply write us.



Splash Guard on Vertical Grinder

INDUSTRIAL



DIVISION

3656 MAIN STREET • HARTFORD 2, CONN.

Power driven brushes, Factory & Institutional cleaning tools, Waxes & Detergents

SIMPLY MAIL TODAY

THE FULLER BRUSH CO., INDUSTRIAL DIV.
3656 Main St., Hartford 2, Conn.

Please send me without cost or obligation a short strip of Fullergript — and tell me how it cuts costs when used as a machine component.

Name _____

Company _____ Title _____

Street _____ City _____ State _____

When inquiring check CP 2596 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

Solvents for paint stripping are non-flammable and usable at full strength, unheated

Uses: Composition No. 56 and Composition No. 57 are designed respectively for tank immersion stripping and brush-on stripping of a wide variety of alkaline-resistant paints and lacquers.

Features: Both compositions are non-flammable, contain no phenols, cresols, acids, or alkalis, and may be used at full strength and unheated.

Description: Composition No. 56, manufacturer reports, is a thin-bodied solvent, neutral in character, having a pH of 7. It is designed for immersion stripping of urea-formaldehyde, alkyd, phenolic and urea-melamine finishes, lacquers, varnishes, wrinkle finishes, and vinylite resins.

Parts to be stripped are immersed for periods of time which will vary depending on type of paint, number of coats, age, and other factors. Some finishes will wrinkle and rinse off in sheets with a pressure rinse after application of composition, others will soften to the point where they can be scraped or brushed off. Used as recommended, solvent is said to be safe on steel, brass, copper, zinc, magnesium, and aluminum, and may also be used on wood since it doesn't tend to raise the grain appreciably.

Second of these materials, Composition No. 57, is a viscous solvent for stripping finishes from vertical or inverted surfaces of equipment. Except for its viscosity, it has the same physical and chemical properties as Composition No. 56. It can be applied full strength by brush-on method, and is allowed to soak on surfaces until paint wrinkles or softens. Paint is then hosed or scraped off.

Many phenolics, alkyds, ureas, vinyls, varnishes, and lacquers are readily removed by this material, manufacturer reports, while some finishes may require more than one application. When work stripped with either composition is to be repainted, manufacturer recommends thorough rinsing to remove all stripping material, since any solvent stripper film remaining on surfaces will prevent proper adherence of new paint coat applications.

(Products of Oakite Products, Inc., Dept. CP, 118F Rector St., New York 6, N. Y. . . . or for more information check CP 2597, pgs. 2 & 3.)

Trifluorochloroethylene polymers, properties and applications

Revised and expanded 6-page technical bulletin discusses properties and applications of manufacturer's trifluorochloroethylene polymers. Data on chemical resistance, permeability, optical properties, and electrical and mechanical properties of the plastic, called Kel-F, are presented.

Enlarged section of bulletin contains information on resistance of material to more than 100 specific chemical substances. Test data on permeability of plastic, in the form of thin film, to water, water vapor, and chemical vapors are presented in tabular form.



Have you
changed
your
address
recently?

● If so, you'll want to insure that your copy of **CHEMICAL PROCESSING** reaches you without interruption. Just send us your new address . . . use the handy form below.

Please answer all questions in regard to your new affiliation, and in addition give us your former address including company, city and state.

mail this request to
**READER SERVICE DEPT.
CHEMICAL PROCESSING**

111 East Delaware Place
Chicago 11, Illinois

Former Company Affiliation

Former Address

Your Name Present Title

Present Company

Main Product

Rating of Company

Street Address

City Zone No. State



CHEMICAL PROCESSING

Bul 1-3-53 is available from Technical Service Dept., Chemical Mfg. Div., The M. W. Kellogg Co., Dept. CP, P.O. Box 469, Jersey City 3, N. J. When inquiring specify CP 2598 on handy form, pages 2 and 3.

Small unit will dehumidify up to 8000 cu ft of enclosed area

Uses: Dehumidifier unit is designed for areas such as small basements and storage rooms.

Features: Unit will dehumidify up to 8000 cu ft of enclosed area and if desired can be equipped with a simple "plug in" automatic control.

Description: Specifications are as follows: 16" high, 10" wide, 17" long; weight is 55 lb; finished in green, with aluminum trim. Bottom pan is equipped with a concealed drawer pull, eliminating protruding handles. Front and back louvers are angled to provide maximum air deflection for efficient water removal. Compressor motor is 1/8 hp, using Freon 12 as the refrigerant agent.

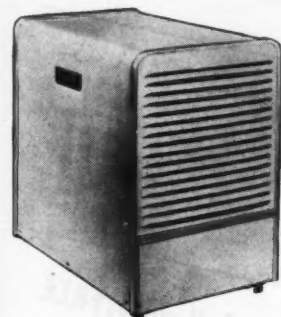
Unit operates in the following manner: Warm, moist air from the room is drawn over a cold coil, temperature of which is so fixed that moisture condenses from the air onto the coil and then drips into removable catch basin. Air then passes over the compressor, acting to cool the compressor unit, so that air emerging from dehumidifier is approximately the same temperature as entering air, but moisture content has been greatly reduced. It is reported that relative humidities of enclosed spaces up to 8000 cu ft can be reduced from 95% to 45%.

(Product of Abbeon Supply Co., Dept. CP, 179-21 Jamaica Ave., Jamaica 32, N. Y. . . or for more information check CP 2599 on handy form, pages 2 and 3.)

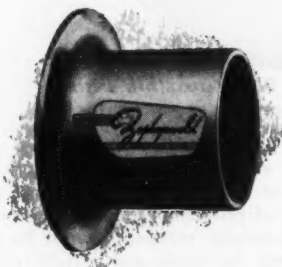
Describes ready-to-use adhesive

Liquid resin, ready-to-use adhesive is briefly described in small, 4-page folder. Material is nonflammable, moisture and mold resistant, and odorless when dry. Suggestions for use are included in folder.

Folder on Glu-Bond is available from Adhesive Products Dept., Swift & Co., Dept. CP, 4200 Packers Ave., Chicago 9, Ill. When inquiring specify CP 2600 on handy form, pages 2 & 3.



Unit can be equipped with a simple "plug in" automatic control



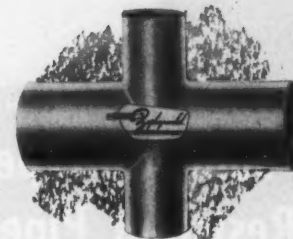
ZEPHYRWELD® WELDING FITTINGS

• TRI-CLOVER offers the most complete line of Zephyrweld Schedule 5 and 10 stainless steel welding fittings in sizes from 1/2" through 24" and 36" for use with stainless steel light gauge pipe. In addition, Schedule 40 fittings are available in sizes through 24".

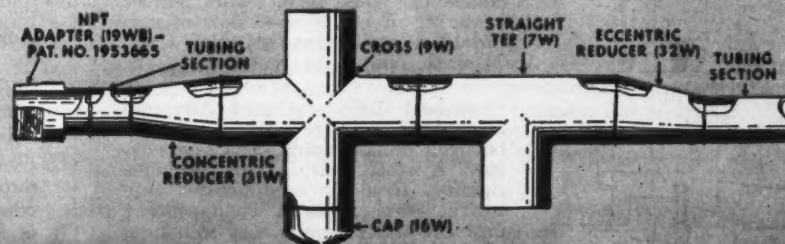
These porosity-free fittings are fabricated from stainless steel types 304, 347, 316 and other stainless steel analyses . . . and are annealed, pickled and passivated in sizes through 4". Larger sizes are passivated and may be annealed upon request.

Schedule 5 and 10 fitting ends are cut flush for rapid welding. Because of their light gauge, no chamfering is required. Schedule 40 fittings are beveled in accordance with ASA specifications.

In addition to butt welding pipe fittings, Tri-Clover manufactures a complete line of stainless steel tube O.D. butt welding fittings for use with light gauge tubing.



• Shown at the right is a composite drawing showing the way in which Zephyrweld fittings are assembled, by butt welding, to light gauge pipe, or to one another. All ends are square and true—no chamfering is required to accomplish fast, clean welding. Note how Zephyrweld fittings are adapted to iron pipe size fittings through use of a special adapter.



Tri-Clover
MACHINE CO.
Kenosha, Wisconsin

TRIALLOY AND STAINLESS STEEL
SANITARY FITTINGS, VALVES,
PUMPS, TUBING, SPECIALTIES

FABRICATED STAINLESS STEEL
INDUSTRIAL FITTINGS AND
INDUSTRIAL PUMPS

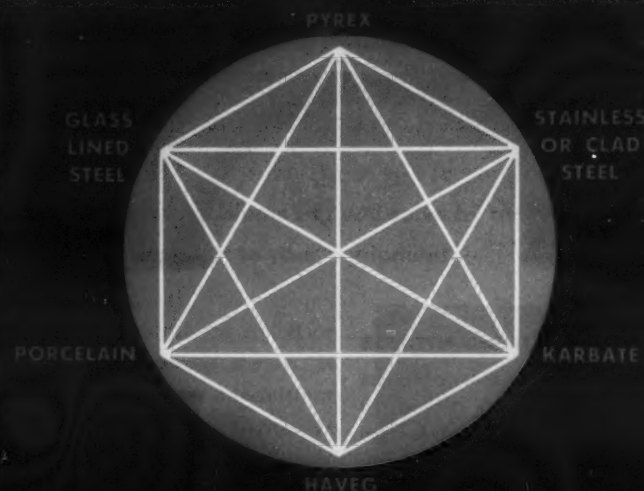
THE Complete LINE

Our experienced engineering service is at your disposal to help solve your specific corrosion-resistant piping problems.

Write for further details, or see your nearest Tri-Clover Distributor.

When inquiring check CP 2601 on handy form, pgs. 2-3

CHEMISEAL MADE OF TEFLON CONNECTIONS



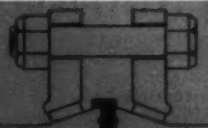
Join All Types of Chemical-Resistant Pipe and Equipment



Chemiseal Teflon-Jacketed Gaskets. Types T6N or T6-300 are standard for Corning conical flanges, seal at unusually low bolt loads.



Chemiseal Flexible Couplings No. 202—(Teflon Bellows with two or three convolutions) and **Chemiseal Expansion Joints No. 212**—(several convolutions), for use in absorbing thermal or mechanical movement and vibration, protecting costly piping. Sizes 1 in. to 12 in. I.P.S. Require no gaskets or adaptors to join unlike piping ends and materials.



Chemiseal Snap-on Type 820 Gaskets. Teflon molded to match contour of conical-end glass pipe, assure perfect centering of joints—free flow of materials. For all standard pipe sizes, 1/4 in. to 6 in.



Chemiseal Teflon-Jacketed Adaptors No. 2-CRS, provide a tight, safe seal between unlike piping ends and nozzles. A steel bearing ring provides rigidity. Resilient core assures safe seal at low bolt loads. Teflon Jacket protects and contains easy-to-handle single unit.

UNITED STATES GASKET COMPANY

FLUOROCARBON PRODUCTS DIVISION
CAMDEN 1, NEW JERSEY
Representatives in Principal Cities Throughout the World



CONSTRUCTION & MAINTENANCE

Weight of aluminum, properties of brass & copper combined in composite metal

Uses: For applications where solid aluminum cannot be used, and in many instances for replacing copper or brass, according to manufacturer.

Features: Copper-clad aluminum is said to provide the light weight of aluminum combined with the desirable properties of copper or brass, such as ease of soldering and electroplating.

Description: This composite metal consists of a layer of aluminum on which a relatively thin layer of copper is clad on one or both sides. Results is a continuous bond with a strength said to be as great as that of aluminum.

Metal is supplied in a soft condition or in the usual range of cold-worked tempers. It is sufficiently malleable to permit its successful use in intricately formed or drawn parts.

Common thickness ratios are 80/20 (80% aluminum, 20% copper by thickness), 90/10, and 10/80/10. Sheet or strip is usually supplied up to 1/16" thick and up to 12 1/2" wide.

(Product of Metals & Controls Corp., General Plate Div., Dept. CP, Attleboro, Mass. . . or for more information check CP 2603 on handy form, pages 2 and 3.)

Fuel-less heat transfer of up to 90% possible with counterflow regenerator

Uses: For any drying process making use of heated air — in the paint industry, pharmaceutical, soap, or chemical manufacturing, and many other industrial processes. Wheel regenerator can also be used wherever ventilation must be maintained, and whenever the inside and outside temperatures differ.

Features: Percentage of heat recovery can be as high as 96%, and will generally approximate 90%, according to manufacturer. This method utilizes the principle of a balanced counterflow — i.e., the same volume of air comes in as is exhausted, and the two air streams very nearly exchange temperatures. Wheel is said to operate very efficiently in any degree of temperature-difference existing between the two air streams.

Description: Unit consists of a rotating wheel through which two air streams flow counter to each other. Exhaust air is blown through the upper half of the wheel and ducted out of the building. In passing through the metal wool contained in the wheel, heat is extracted from outgoing air. Fresh air is blown through the bottom half of the wheel at the same time. Wheel revolves slowly, and heat previously transferred to the metal wool is picked up by the incoming air stream, and thus enters building at a temperature only slightly changed from that of the exhausted air.

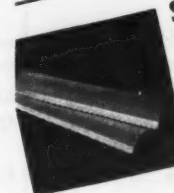
Packing of the wheel is of such a character and so held in place that it can neither conduct nor convect heat axially. The frame of the wheel and the casing in

MEMO:

specify *Cambridge* wire cloth parts for—

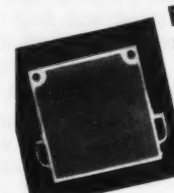
SCREENING

We can produce original or replacement screens in practically any size or shape, from any type of wire cloth . . . and in small or large quantities. We'll be glad to quote on your needs.



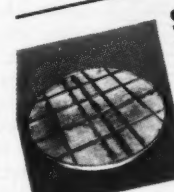
FILTERING

Our designers and production men are familiar with practically all types of filter presses, thus can design and fabricate wire cloth filter leaves for vertical or horizontal models, whether pressure or gravity fed.



SPECIAL USES

Non-standard parts are "standard" with Cambridge. We can work from your prints, or our Engineering Department will draw up prints for your approval on specially designed assemblies.



Here's the full story, FREE . . . 84-page catalog describes Cambridge facilities for fabricating wire cloth parts. Also contains useful metallurgical data. Write for your copy today.



The Cambridge Wire Cloth Co.
Dept. F • Cambridge 7, Md.

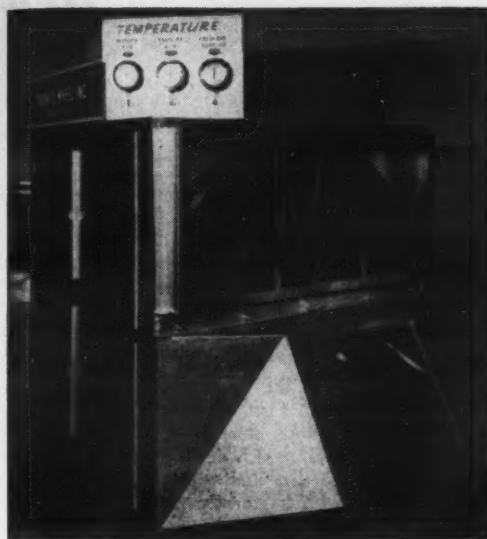
WIRE CLOTH METAL CONVEYOR BELTS SPECIAL METAL FABRICATIONS

OFFICES IN PRINCIPAL INDUSTRIAL CITIES See "Wire Cloth" in your classified phone book.

When inquiring check CP 2604 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 2602 on handy form, pgs. 2-3



Heat exchange unit utilizes principle of balanced counterflow. Equal volumes of exhaust and incoming air very nearly exchange temperatures

which it rotates are so designed and constructed that no appreciable air can flow either from one air conduit to the other, nor radially from the wheel.

Unit comes in five models for handling 3000 to 20,000 cfm of air. All units are 26 in deep, and surface area varies from 53 sq in to 128 sq in.

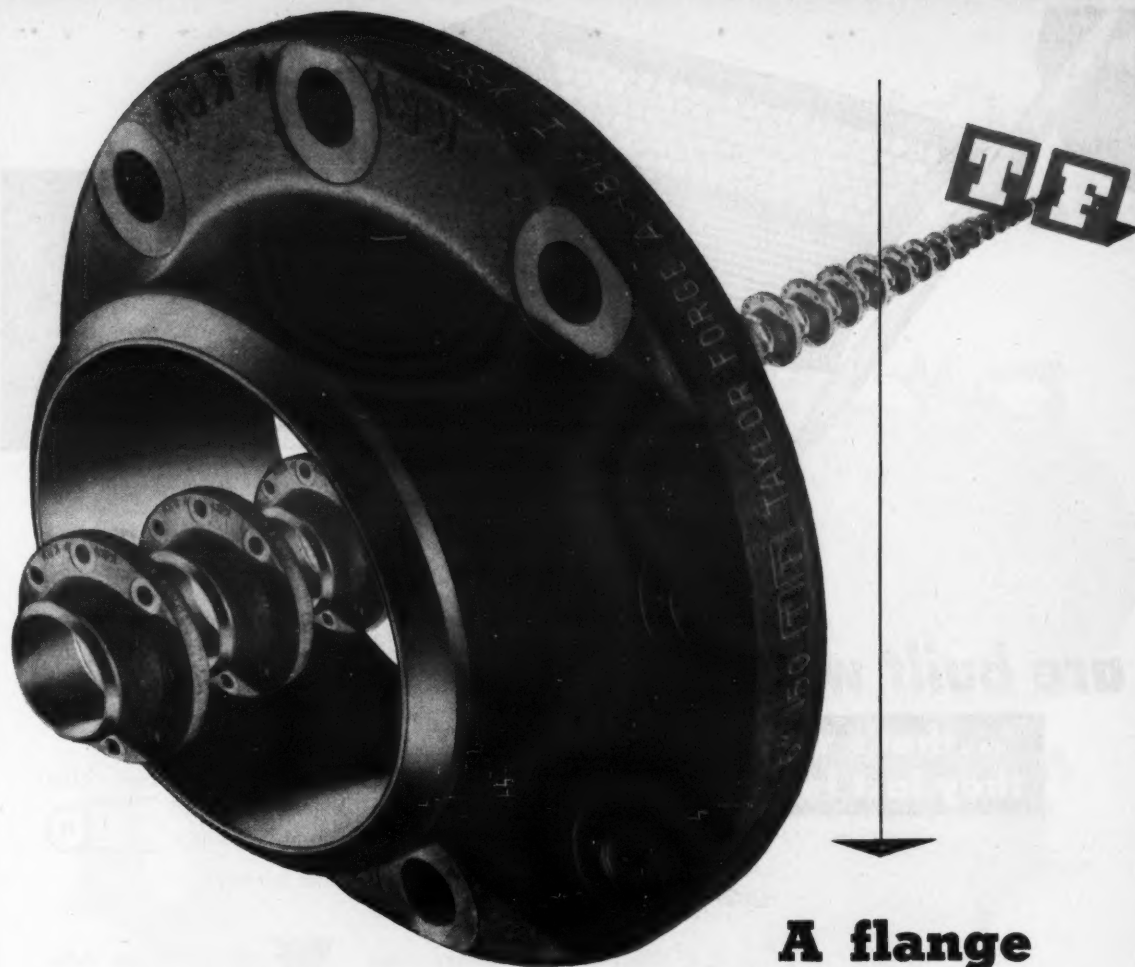
(Product of Therm-O-Wheel, Inc., Dept. CP, 95 Liberty St., New York 6, N. Y. . . or reader may secure more information by checking CP 2605 on convenient Reader Service slip between pages two and three.)

Boiling oil withstood for two years by synthetic rubber covering for steel mill rolls

Used for protecting a pair of steel mill rolls, Hycar synthetic rubber covering has withstood the action of boiling oil for more than two years, yet is none the worse for wear. Other rubber covers, either crude or man-made, lasted about a week on the same job, according to manufacturer. The covers are in use on rolls at the Niles Rolling Mill Div., Sharon Steel Corp., Niles, Ohio.

The steel mill rolls work like the wringers on a washing machine, drying sheet steel as it emerges from an oil bath heated to 350°F. Rubber usually will break down at temperatures over 250°F. Sheet steel made with this oil-impregnated surface is utilized by companies in manufacturing rust-resistant gasoline tanks.

(Hycar synthetic rubber is development of B. F. Goodrich Chemical Co., Dept. CP, 448 S. Main Street, Akron, Ohio . . . or reader may secure more information about this product by checking CP 2606 on convenient Reader Service slip between pages two and three.)



A flange with a background...

You are looking at a flange with a history. Taylor Forge made the forged steel flange and in a sense the forged steel flange made Taylor Forge. It was Taylor Forge, back in 1905, who made the first forged steel flanges on a commercial scale . . . and it is Taylor Forge who has guided flange development across the past half century.

Through the first threaded flange form, the bolted Van Stone form, and the perfected welding neck form pictured here, Taylor Forge has undeniably contributed more to flange development than any other organization*.

Taylor Forge Welding Neck Flanges are a part of the WeldELL® line—the line that more than 20 years ago gave industry the first complete line of fittings for pipe welding. The organization that led development is still leading . . . in scope of types, sizes, weights, materials . . . in quality and downright value!

For up-to-the-minute facts see your Taylor Forge Distributor

TAYLOR FORGE

TAYLOR FORGE & PIPE WORKS, General Offices & Works: P.O. Box 485, Chicago 90

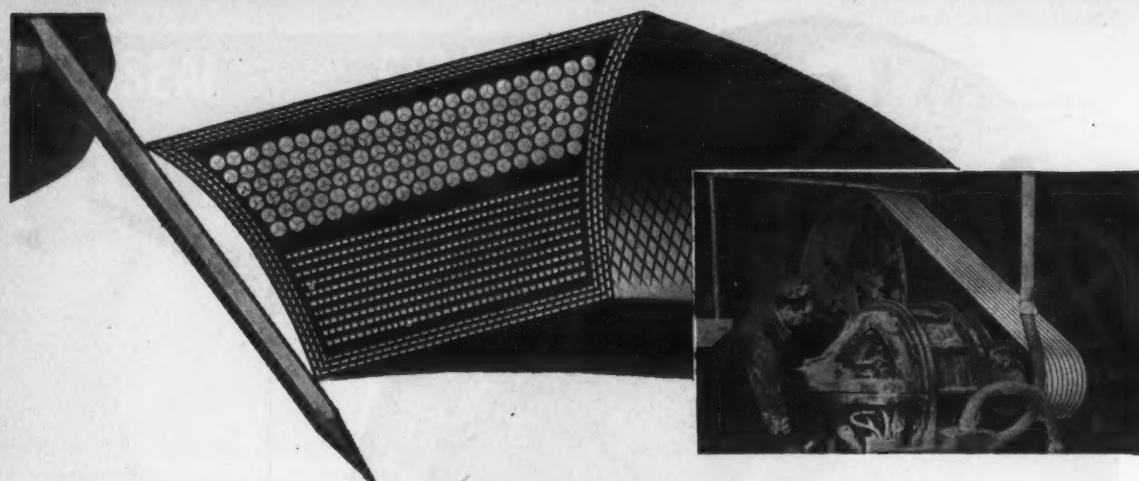
Plants at: Carnegie, Pa., Fontana, Calif., Gary, Ind., Hamilton, Ont., Canada



When pressures rose from the old 150- and 300-pound standards to 400, 600 and finally 900 pounds, it was largely the exhaustive research of Taylor Forge that supplied the formulas for determining stresses in flanges for any given condition of loading. Among many examples: the Taylor-Waters formula, published in 1927, became and still is the

basis of recognized practice for flanges in sizes through 24". Again, in 1938 Taylor Forge published the first edition of the now authoritative "Modern Flange Design" based on methods proposed by E. O. Waters, D. B. Rossheim, D. B. Westrom and F. S. G. Williams, Taylor Forge Manager of Engineering Standards. (ASME Trans., Apr. 1937)

When inquiring check CP 2607 on handy form, pgs. 2-3



Gates V-Belts are built with **CONCAVE SIDES**

(U.S. PATENT NO. 1813698)

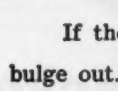
**...that's why
they last longer!**

If you want lower V-Belt costs, just make this simple test...pick up *any* V-Belt and bend it as if it were going around a pulley.



As the belt bends, grip its sides between your fingers and thumb.

If the belt has *straight sides* you feel the sides bulge out. This forces the sides of the belt to press *unevenly* against the V-pulley... and you get concentrated wear at the points shown by the arrows.



**Now, try this same test with the V-Belt that is built with
CONCAVE SIDES —the Gates Vulco Rope.**

As this belt bends, you can feel the CONCAVE SIDES *fill out* and become perfectly straight.



These sides press *evenly* against the V-pulley. All wear is distributed *uniformly* across the full width of the Gates Vulco Rope and the CONCAVE SIDES therefore mean longer belt life and lower V-Belt costs for you.

When you buy V-Belts, be sure to get the V-Belt with the CONCAVE SIDES—the Gates Vulco Rope!

Gates Engineering Offices and Jobber Stocks are located in all industrial centers of the United States and in 71 foreign countries.

CS-338

V-Belts — Howe
Molded Rubber Goods
for Industry
World's Largest Maker
of V-Belts

Gates

**VULCO
ROPE**

DRIVES

THE GATES RUBBER COMPANY • DENVER, U.S.A.

When inquiring check CP 2608 on handy form, pgs. 2-3

New

German method of cleaning coal-washery slurries

A method of cleaning and dewatering coal-washery slurries to recover a clean coal product that can be coked or made into briquets has been developed by German scientists and is described in an information circular. Method, called the Convertol process, was developed by the research staff of Deutsche-Kohlenbergbau-Leitung, the coal producer's association of western Germany.

Circular describes the German process as consisting of two steps. First, small quantities of heavy oil are mixed with slurry. Oil coats the tiny particles of coal, which in the second step are separated from dirt and water in a centrifuge. Water and dirt pass through screen perforations in the centrifuge, while oiled coal particles are retained and later discharged as a clean, low-moisture product.

Germans report that coal produced by this method contains virtually no free waste material and only 8 to 10% surface moisture. This is said to be an attractive feature, as present methods of treating washery slurries by mechanical means yield a product containing 20 to 25% moisture. Moisture content not only affects the heating value of coal, but also makes it more expensive to transport. Shipments of coal with a high moisture content often freeze in transit in cold weather.

Circular covers in detail the Convertol process and the equipment it employs. A description of the first commercial Convertol plant at Hanover Colliery in Germany is also included. Three illustrations and two tables supplement the text.

Information Circular 7660, "Convertol Process of Coal Slurry Treatment," P. N. 40659, May 4, 1953, can be obtained from the Bureau of Mines, Publications Distribution Sect., 4800 Forbes St., Pittsburgh 13, Pa.

How to use sound signals for more protection & production

Combination manual, data book, and catalog is a reference work on industrial sound signals. Some of the subjects covered in the book include: a simplified explanation of fundamentals of sound; a glossary of signal and sound terms; a guide for selecting signal equipment; nine suggested steps in choosing a signal installation; and hints for compiling a coding signal call system.

Central section of book is devoted to specifications and listings of company's signal equipment. In addition to illustrations and descriptions of various models of howlers, horns, buzzers, and sirens, this section offers technical data including construction features, typical applications, dimensional diagrams, and decibel output at various distances.

Literature

Equipment shown covers special types for industrial, mine, outdoor, and hazardous locations.

Industrial Signal Guide Book is available from Benjamin Electric Mfg. Co., Dept. CP, Des Plaines, Ill. When inquiring specify CP 2609 on handy form, pages 2 and 3.

Film features advantages of proper welding techniques

Full-color strip film with sound accompaniment is 19 min long and features case histories of advantages resulting from use of proper welding techniques. The sound accompaniment describes the various jobs pictured and explains the advanced welding methods and procedures.

Film "Better, Faster, Cheaper With Welding" is produced by and available from Technical Information Service, Dept. "P", Eutectic Welding Alloys Corp., Dept. CP, 172nd St. and Northern Blvd., Flushing 58, N. Y. When inquiring specify CP 2610 on handy form, pages 2 and 3.

Gas pipeline leakage reviewed

Methods of testing pipeline are given in bulletin which also discusses the physical laws of gas leakage. Bul 265, "Leakage from High-Pressure Natural-Gas Transmission Lines," PN 40864, May 6, 1953, can be obtained by remitting 45c per copy direct to Supt. Of Documents, U.S. Govt. Printing Office, Washington 25, D.C.

Standardized industrial buildings and units discussed

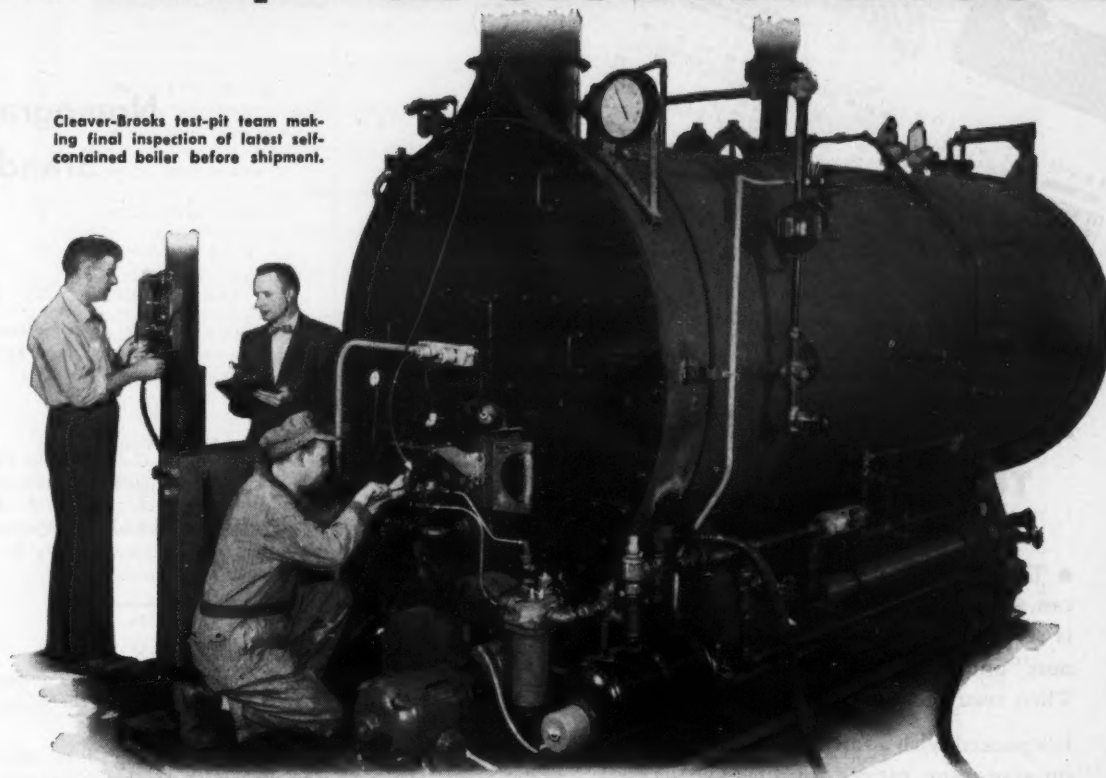
Twelve-page bulletin discusses company's method of building construction which utilizes completely standardized buildings and components. According to the company, their research has shown the standard unit bay of 30 x 40' with a clear height of 15' provides maximum use and flexibility.

Standard office unit and standard warehouse or plant unit can be assembled in any numerical combination or pattern to form the desired building. From exterior finish to interior equipment, every item is of a predetermined size and quality. However, both the standard office and industrial bays are designed for alternate use of materials. For example, walls may be of brick, aluminum, concrete block, or a combination of these. Other items may be added or omitted to suit customer.

Bulletin on Modular Method is available from The Ferber Co., Dept. CP, 16 Johnson Ave., Hackensack, N. J. When inquiring specify CP 2611 on handy form, pages 2 and 3.

"Test-Pilots" have their counterpart at Cleaver-Brooks

Cleaver-Brooks test-pit team making final inspection of latest self-contained boiler before shipment.



HIGH SCORES . . . on factory and on-job tests guarantee greatest return from boiler investment

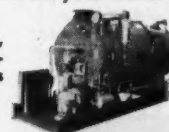
When test pilots give the familiar "O.K." — that's the sign of proven performance. It's the same with boilers in the Cleaver-Brooks plant. Only after accurate, thorough inspection and testing under actual operating conditions do boilers get the final "O.K." from experienced test engineers. That's why you get guaranteed 80% efficiency from your Cleaver-Brooks boiler.

A record of this test is available to every buyer on request. In fact, you as a buyer, consultant, or contractor are invited to witness the actual test on your Cleaver-Brooks boiler before shipment.

And further, Cleaver-Brooks boilers are placed in operation at the job site by factory service engineers who check installation, train your operators and make complete and detailed field tests.

So, when you buy a boiler, insist on factory tests as well as field service tests by qualified engineers. There is no better way of insuring yourself of the very best value money can buy and the greatest return from your boiler

Available for oil, gas and combination oil/gas firing.



investment. Look to Cleaver-Brooks, the leader in the "Packaged" Boiler field for two decades. Write today for latest Catalog AD-100.

CLEAVER-BROOKS COMPANY

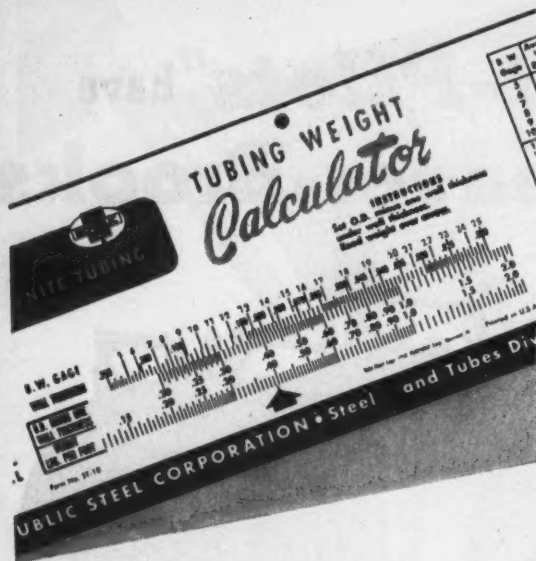
Dept. H, 349 E. Keefe Ave.
Milwaukee 12, Wisconsin, U.S.A.

Cleaver-Brooks

Originators of the
Self-Contained Steam Boiler

BOILERS — STEAM OR HOT WATER — FOR HEATING AND PROCESSING IN SIZES FROM 15 TO 500 HP, 15 TO 250 PSI

When inquiring check CP 2612 on handy form, pgs. 2-3



EASY WAY TO FIGURE TUBING WEIGHTS

● This ELECTRUNITE Tubing Calculator can save you a lot of time. All you do is set the "O.D. minus one wall thickness" under the "wall thickness" scale. Then read the weight over the arrow.

It's packed with additional information on size-gage ranges for ELECTRUNITE Round Mechanical Tubing, both Carbon and Stainless; ELECTRUNITE Boiler Tubes; Heat Exchanger and Condenser tubing, Carbon and Stainless; and ELECTRUNITE Stainless Steel Pipe. It also has decimal equivalents. All the information you need . . . right at your finger tips . . . when you need it.

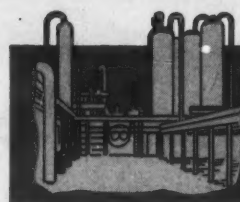
Get this Republic ELECTRUNITE Tubing Calculator today. It's yours . . . free for the asking. Just write to:



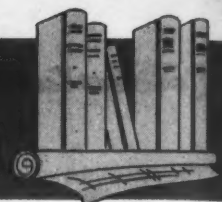
STEEL AND TUBES DIVISION
REPUBLIC STEEL CORPORATION
207 East 131st Street • Cleveland 8, Ohio

ELECTRUNITE TUBING

When inquiring check CP 2613 on handy form, pgs. 2-3



Processing and Engineering Data



48a

Nomograph for Computing Standard Deviations

By D. S. DAVIS

Professor of Chemical Engineering
Virginia Polytechnic Institute

NOW that quality control and attendant statistical methods have gained a rightful place in chemical and other industries, chemists and chemical engineers are computing standard deviations in greater volume than ever before, usually by means of the formula —

$$\sigma = \sqrt{\sum d^2 / (n-1)}$$

where σ = standard deviation

$\sum d^2$ = sum of the squares of the deviations of each observation from the mean

n = number of observations

This equation is not well adapted to solution by means of computing machines, but it can be handled quickly, conveniently, and accurately through use of the accompanying nomograph.

Typical Example

The chart, which was constructed by methods described previously¹, is used as follows: What is the standard deviation for a set of 14 observations when the sum of the squares of deviations of single observations from the mean is 1.68?

As shown by the lower index line, connect 1.68 on the $\sum d^2$ -scale with 14 on the n_1 -scale and read the standard deviation on the σ_1 -scale as 0.360. Same

index line serves for $\sum d^2 = 16.8$ and $n_1 = 14$, for which data the standard deviation is read on the σ_2 -scale as 1.14.

When the number of observations is greater than 40, n_2 -scale at the right is used. For instance, what is the standard deviation when the sum of the squares of the deviations of 85 observations is 2.71?

As shown by upper index line, connect 2.71 on $\sum d^2$ -scale with 85 on the n_2 -scale and read desired value as 0.18 on the σ_3 -scale. Same index line serves for $\sum d^2 = 27.1$ and $n_2 = 85$, for which case the standard deviation is read on the σ_4 -scale as 0.57.

Although the $\sum d^2$ and σ -scales cover the ranges of only 1 to 100 and 0.05 to 5.0, respectively, the chart can be used for any values of these variables through the simple device of moving the decimal point in $\sum d^2 \times$ places in either direction and of moving the decimal point in $\sigma \times/2$ places in the same direction. Thus the upper index line also covers the case of $\sum d^2 = 0.271$ and $n_2 = 85$, for which $\sigma_4 = 0.057$.

LITERATURE CITED

- 1) DAVIS, D. S., "Empirical Equations and Nomography," Chap. V., New York, McGraw-Hill Book Co., Inc., (1943)

Illustrated catalog describes 110 items of lab apparatus

Complete line of laboratory apparatus and various facilities involved in manufacture of these products are outlined in informative, 32-page catalog. Descriptive material is divided into three sections: Section I, Standard Scientific Glass Apparatus; Section II, Special Scientific Glass Apparatus; and Section III, Scintillation Crystals and Liquids; Special Chemicals, Gases and Accessories; and Thin Films.

Cat 22 is issued by Wakefield Industries, Inc., Dept. CP, 5108 W. Grove St., Skokie, Ill. When inquiring specify CP 2614 on handy form, pages two and three.

Pictures all sorts of temp controls

Four-page condensed catalog includes general description of all manufacturer's electric temperature controls. All models (including two recent additions) are pictured and publication also includes description of pneumatic and valve type controls. Instruments are compared in comprehensive selection table which shows essential features of each of seventeen electrically operated temperature controls. Some units are suitable for temperatures as high as 1800°F and operate one, two or three electrical switches.

Cat G-18 is issued by Burling Instrument Co., Dept. CP, Vose Ave., South Orange, N. J. When inquiring specify CP 2615 on handy form, pages two and three.

Laboratory filters are unbreakable and chemically resistant

Filter elements fabricated of stainless steel are not subject to mechanical or thermal breakage and are light in weight. The porous metal material is made by powder metallurgy methods from pre-alloyed stainless steel powder.

Featuring higher flow rates, elements are useful for all alkalis, hot or cold, and are satisfactory for most acids. Hydrochloric, dilute sulfuric, and boiling concentrated nitric acids should be avoided when using these filters.

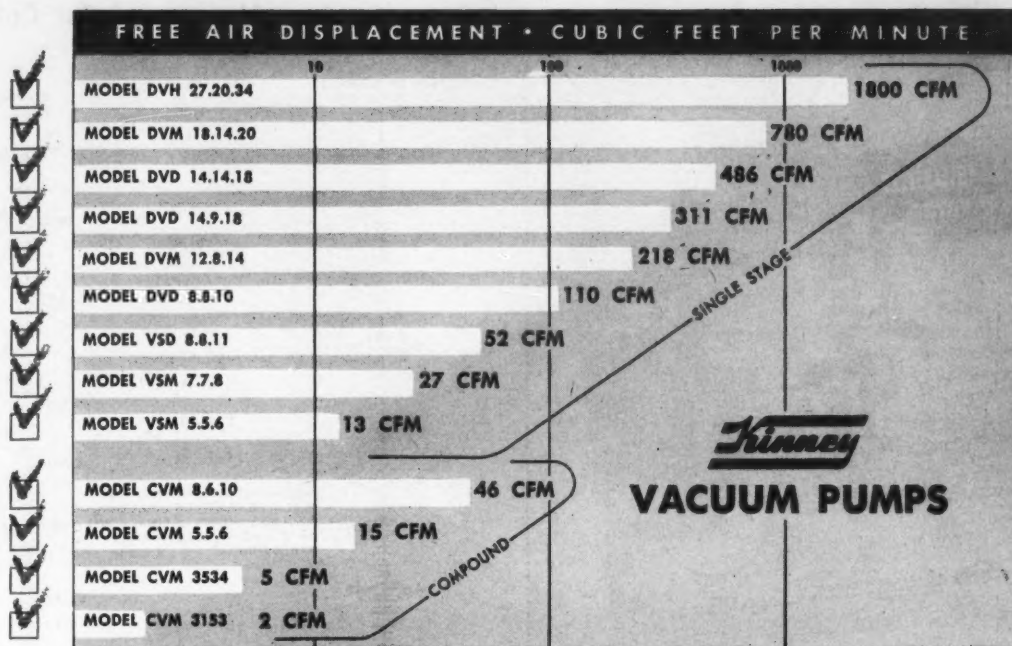
Units are available in the following forms: filter crucibles, Buchner funnels, gas dispersion tubes, and beaker filters. Filter crucibles and Buchner funnels may be used for the analysis or separation of 24 different elements.

Specifications and advantages of stainless steel filters are given in informative, 6-page bulletin. Porosities, flow rates and available forms are outlined in detail.

"All Stainless Steel Laboratory Filter" is issued by Micro Metallic Corp., Dept. CP, Glen Cove, N. Y. When inquiring specify CP 2616 on handy form, pages 2 and 3.



More pumps to pick from!



What's your vacuum problem? Kinney offers you the BIG LINE of vacuum pumps — the broadest range of mechanical, oil-sealed vacuum pumps on the market. Pick the exact pump you need from our line. Get fast pump-down, fast recovery speed, and reliable low absolute pressure — and get them efficiently and economically by buying the Kinney Pump that's right for the job. Experienced vacuum engineers, here in Boston and in all our branch offices, will be glad to discuss the applications of vacuum in your plant.



Kinney Manufacturing Co., Boston 30, Mass. Representatives in New York, Chicago, Detroit, Cleveland, Atlanta, Philadelphia, Pittsburgh, Johnstown (Pa.), Los Angeles, Charleston (W. Va.), Houston, New Orleans, San Francisco, Seattle, and foreign countries.

SEND COUPON FOR COMPLETE DETAILS

KINNEY MANUFACTURING CO.
2572 WASHINGTON STREET • BOSTON 30, MASS.

- ☐ Please send Bulletin V-518 describing the complete line of Kinney Vacuum Pumps. Our vacuum problem involves:
- ☐ Vacuum drying
 - ☐ Vacuum coating
 - ☐ Vacuum metallurgy
 - ☐ Vacuum impregnating
 - ☐ Vacuum distillation
 - ☐ Vacuum research
- ☐ Please have your vacuum engineer call at our plant.

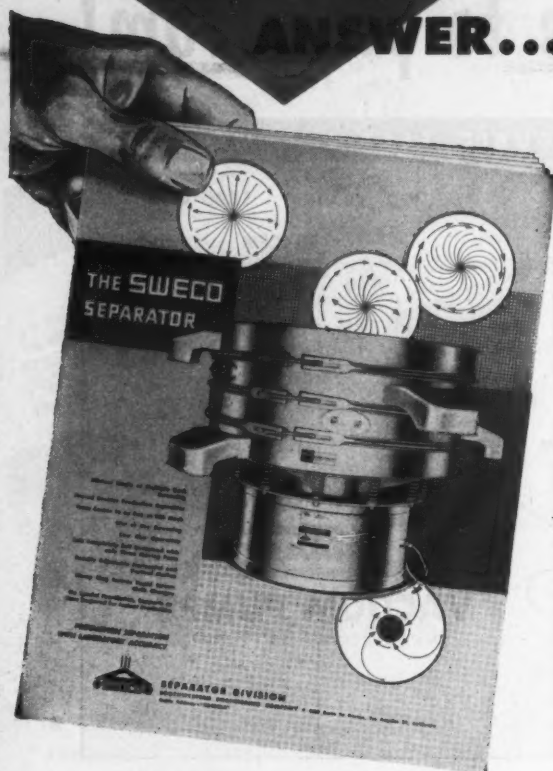
Name _____
Company _____
Address _____
City _____
State _____



SUBSIDIARY OF THE NEW YORK AIR BRAKE CO.

When inquiring check CP 2617 on handy form, pgs. 2-3

HERE IS THE
ANSWER...



...Meet all State and Municipal Sewage Waste Disposal and Stream Pollution Regulations

Now there is a real solution to the problem of screening solids out of manufacturing waste water *before* it reaches the main sewage disposal outlets. SWECO Separators will screen from 90% to 100% of all solids from waste liquids on a production basis through screens from 50 up to 325 mesh. SWECO Separators are doing a job in the following and many other industries:

PULP & PAPER	LUMBER
TEXTILES	CHEMICALS
CANNING	REFINERY
CERAMICS	MINING

Send for Data File 9-3 and name of your nearest SWECO Sales Engineer.

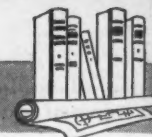


SEPARATOR DIVISION
SOUTHWESTERN ENGINEERING COMPANY
4800 Santa Fe Avenue, Los Angeles 58, Calif.

S-9



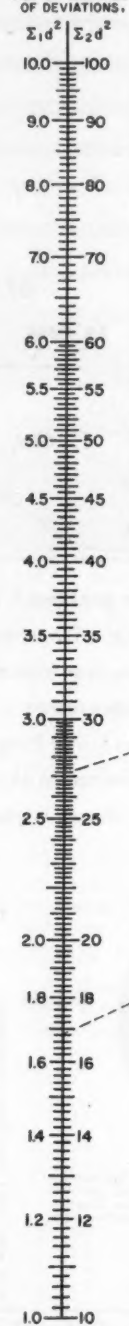
Processing and Engineering Data



48b

Nomograph for Computing Standard Deviations

SUM OF SQUARES
OF DEVIATIONS.

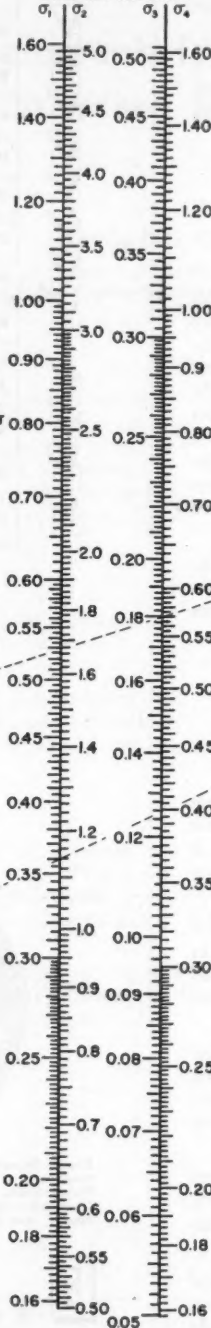


$$\sigma = \sqrt{\Sigma d^2 / (n-1)}$$

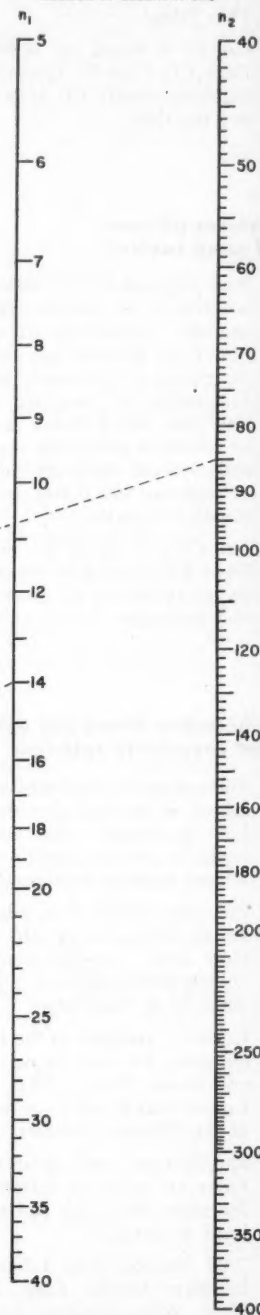
KEY
 $\Sigma_1 d^2 - \sigma_1^2 \rightarrow n_1$
 $\Sigma_2 d^2 - \sigma_2^2 \rightarrow n_2$

MOVING DECIMAL POINT IN Σd^2
X PLACES IN EITHER DIRECTION
REQUIRES MOVING DECIMAL POINT
IN σ X 1/2 PLACES IN SAME
DIRECTION

STANDARD DEVIATION



NUMBER OF OBSERVATIONS



When inquiring check CP 2618 on handy form, pgs. 2-3

**To change capacity on tester,
simply change dynamometer**

Available in seven different ranges, unit will test materials with a tensile strength varying from only a few lb up to 160,000 lb psi. To change the capacity of any unit, all that is necessary is the removal of bearing pins and shock absorber and subsequent changing of the gage involved to that with the desired range. Gages are available in seven different capacity ranges with dials from five to ten inches.

In addition to being useful in the testing of flats and rounds, units can be used to check virtually any type of material — cloth, wire, brass, plastics, glass, steel, aluminum, springs, wood, rope, canvas, castings, small parts of various types, rivets, screws, rubber, or adhesives.

Specifications, features and applications of tester are outlined in Bul No. 2 issued by W. C. Dillon & Co., Inc., Dept. CP, 14620 Keswick St., Van Nuys, Calif. When inquiring specify CP 2619 on handy form, pages 2 and 3.

**Revised catalog doubles
as operating manual**

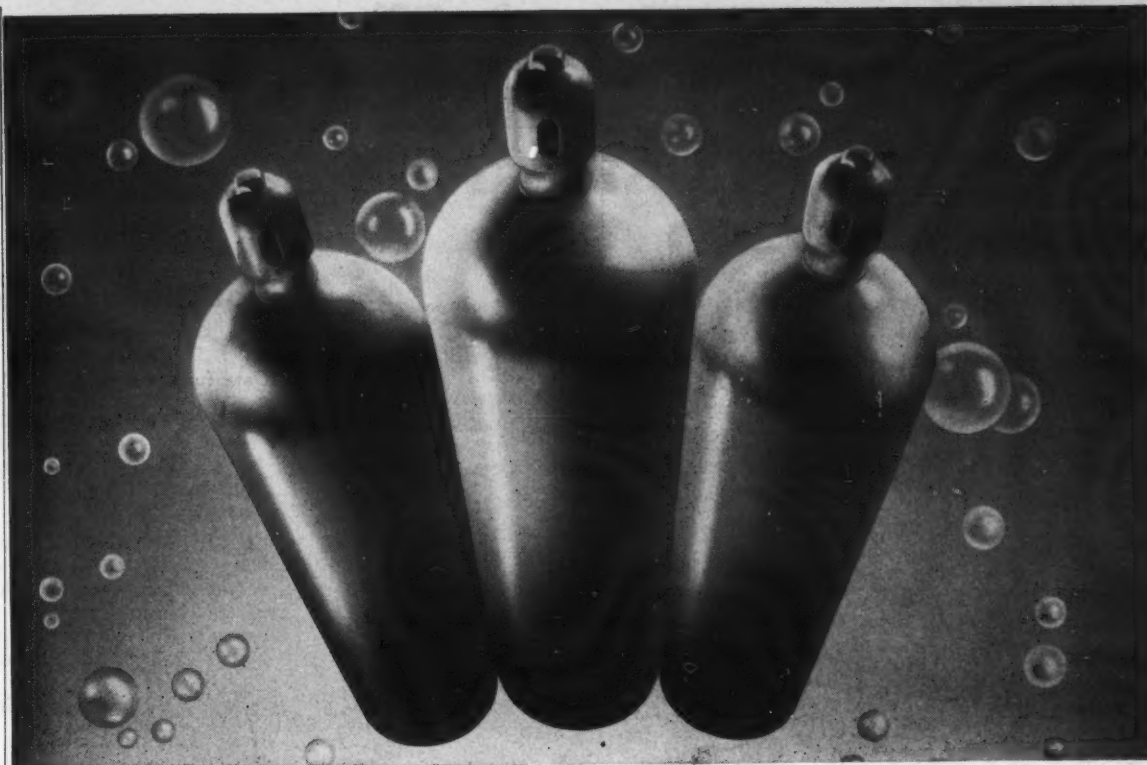
Forty-two-page catalog describes in considerable detail design and construction features of strip-chart electronic recorder. Publication graphically displays interior views of instrument. It also illustrates and describes sequence of galvanometer detection, typical circuits used, standard features, special features, and pertinent specifications and engineering details. Margin index of catalog simplifies locating individual sections. Information presented makes this publication equivalent of an operating manual.

Cat ND44 (1) is issued by Leeds & Northrup Company, Dept. CP, 4934 Stenton Ave., Philadelphia 44, Pa. When inquiring specify Dept. CP 2620 on handy form, pages 2 and 3.

**Price list of safety signs
and equipment**

Included within six-page illustrated folder are descriptions and prices of signs and equipment designed for functional use in the plant and on the highway. Signs listed are for accident prevention, warnings of electrical or mechanical hazards, directional and general information, industrial good housekeeping, no smoking and fire prevention, and parking and traffic control. Also included in the list is the manufacturer's "A" stand which is warning sign especially designed for outdoor work areas. It is a portable sign that is stated to be very stable in high winds.

"Price and Legend List, 3/1/53" is issued by Eastern Metal of Elmira, Inc., Dept. CP, PO Box 84, 130 Harrison St., Elmira Heights, N. Y. When inquiring specify 2621 on handy form, pages 2 and 3.



SHIP 'EM FULL...OR SHIP 'EM EMPTY...

Hackney Lightweight Cylinders

SAVE YOU PLENTY!

There's no excess weight in a shipment of Hackney Seamless Compressed Gas Cylinders—no waste freight charges out or back.

For one reason—selected, high-quality steels assure adequate strength and light weight. For another—the Hackney process of cold drawing results in a uniform sidewall thickness that eliminates excess material.

MADE FOR THE SAFE TRANSPORTATION AND STORAGE OF MANY GASES—Hackney cylinders are convenient to handle... easy to fill and empty. They resist transportation and handling abuse...more than meet all ICC regulations.

Write for complete information on the many types and sizes available.



Pressed Steel Tank Company

Manufacturer of Hackney Products

1463 S. 66th St., Milwaukee 14 • 1387 Vanderbilt Concourse Bldg., New York 17
235 Hanna Bldg., Cleveland 15 • 936 W. Peachtree St., N. W., Room 126, Atlanta 3
208 S. LaSalle St., Room 796, Chicago 4 • 568 Roosevelt Bldg., Los Angeles 17
18 W. 43rd St., Room 19, Kansas City 11, Mo.

CONTAINERS FOR GASES, LIQUIDS AND SOLIDS

When inquiring check CP 2622 on handy form, pgs. 2-3



WILSONIZE TO ECONOMIZE



MODEL R CUTTER HEAD

7 ways
better

Here are seven good reasons why the Wilson Model R Cutter Head assures refineries and chemical plants faster, more thorough tube cleaning.

- 1. Renewable Cutter Pin Bearings.** No need to replace entire cutter head when pin bearings wear.
- 2. Reversible and Interchangeable.** When bearing wears on one side, just rotate it in its place for double service. When both sides are worn, it is only necessary to replace the worn bearing . . . not the whole set.
- 3. Faster Cutting Speeds.** The cutter pins revolve freely, new pin bearings reduce surface wear on the wheels—less friction all around.
- 4. Low, Easy Maintenance.** Self-aligning bearings are replaced with just a twist of the wrist. One nut opens the whole assembly . . . saves user's time . . . cuts downtime for tube cleaning.
- 5. Self-feeding and Non-tracking . . .** won't cut tube surfaces.
- 6. Extra Expansion.** The special cutter pin bearing provides for greater radial expansion . . . permits removal of deposits of more variable thickness . . . assures more thorough cleaning.
- 7. Made from the "solid"** . . . accurately made of alloy steel . . . greatest assurance of soundness . . . less likely to break in the tube.

TW 509

THOMAS C. WILSON, INC.
21-11 44th AVENUE, LONG ISLAND CITY 1, N. Y.
Representatives in all principal cities

CABLE ADDRESS: "TUBECLEAN", NEW YORK

WILSON

TUBE CLEANERS • TUBE EXPANDERS

When inquiring check CP 2623 on handy form, pgs. 2-3



Processing and Engineering Data



49

Capacities of Large Belt Conveyors

Data furnished by JEFFREY MANUFACTURING COMPANY

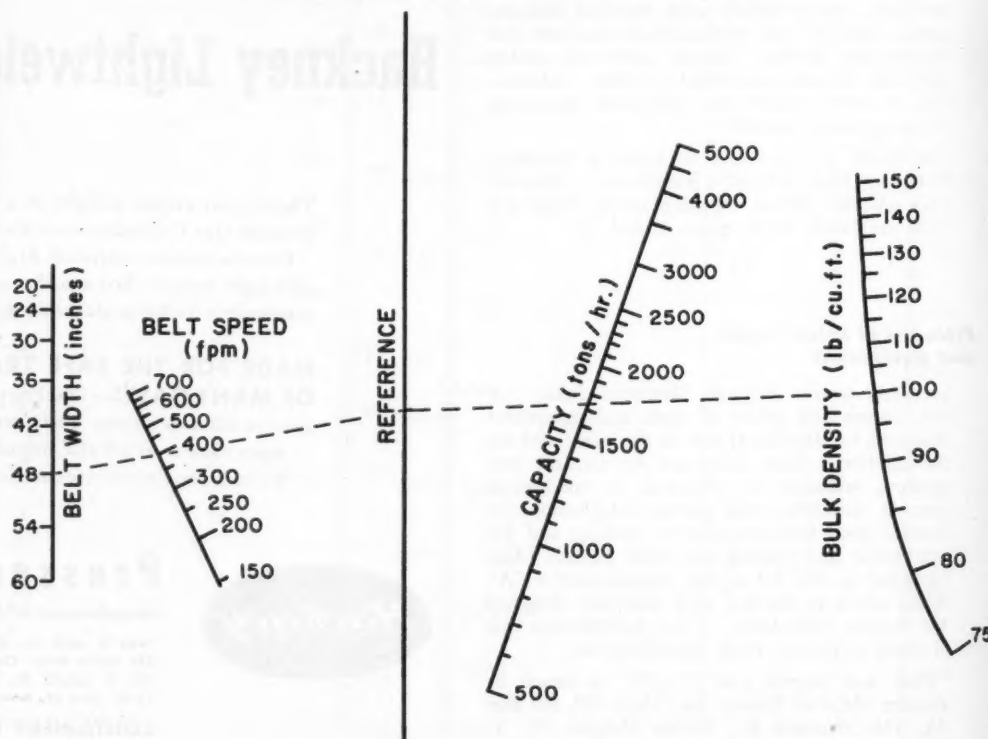
Nomograph prepared by CHEMICAL PROCESSING Staff

ACCOMPANYING nomograph has been designed to allow rapid estimation of capacity of troughed-idler belt conveyor systems of moderate to high capacity. Agreement with proven figures is good except for the widest (60-inch) belt at high speeds. Nomograph capacities for this belt at 600 feet per minute are about 11% higher than those actually attained.

Typical Example

How much phosphate rock (pebbles — bulk density of 100 lb/cu ft) will a 48-inch troughed belt deliver when running at 400 feet per minute?

Connect 48 on belt-width-scale with 400 on speed scale. This locates reference point. Connect reference to bulk density of 100 to find intersection on capacity scale at 1750 tons per hour.



NEW LITERATURE

Details whole gamut of controllers

Eighty-page catalog covers general problem of process control. Applications for industrial control is the first general section and more specialized problems are dealt with under headings such as automatic control systems, temperature controllers, humidity controllers, etc. Illustrative drawings are frequent and well chosen, and information is completed with photographs, tabular presentations of specifications, ranges, and other necessary information.

Catalog also delves into switches, electric motors, special purpose valves, and various other accessories. Use of publication is made easier by two indices: one a subject index, the second an index by model number.

Catalog 8305 is issued by Industrial Division, Minneapolis-Honeywell Regulator Co., Dept. CP, Station 64, Wayne & Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 2624 on handy form, pages 2 and 3.

Pictures streamlined boiler baffles

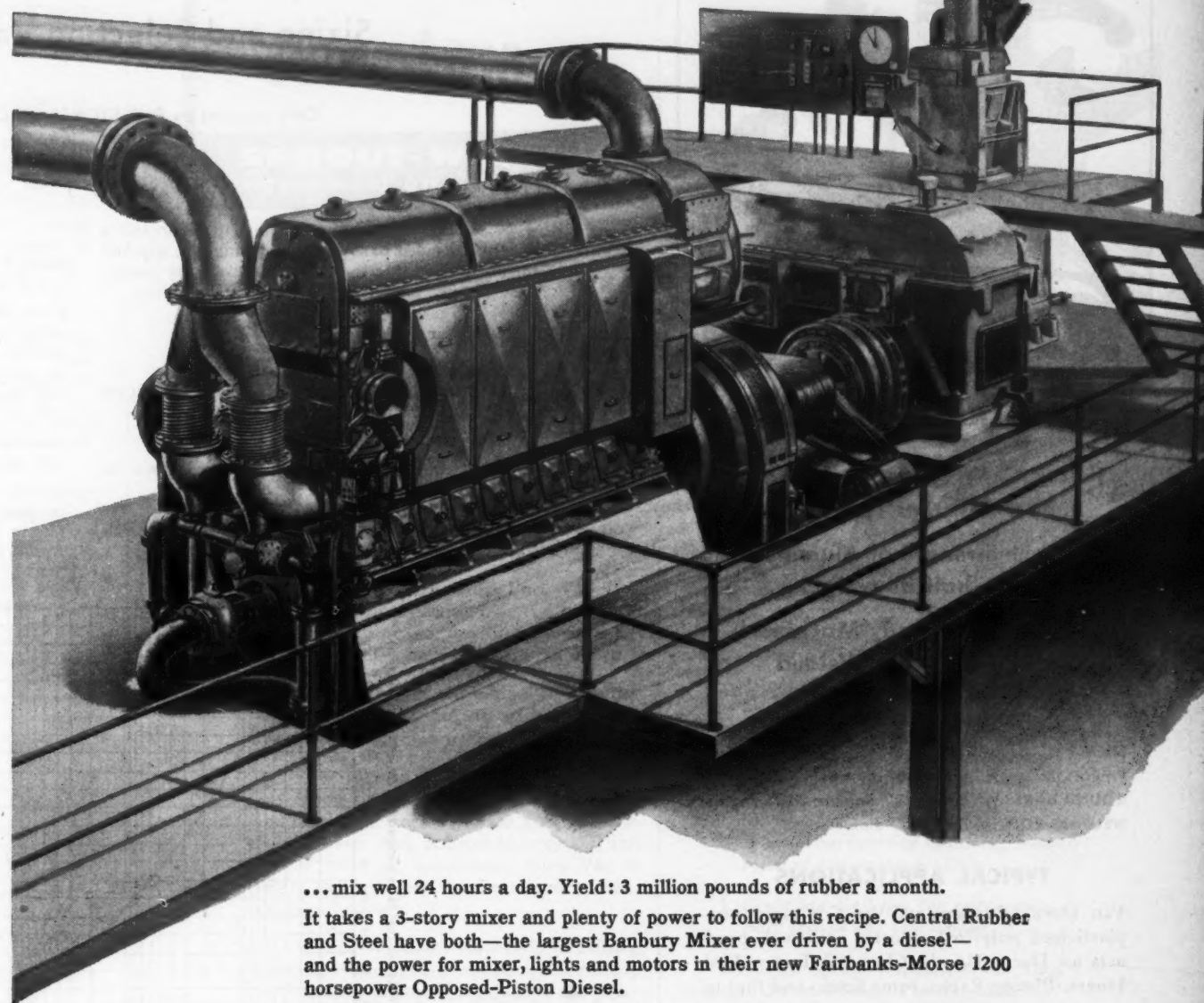
Four-page bulletin illustrates in detail how streamlined baffles are applied to boilers of all types and sizes. Twenty-one drawings of boilers show how these baffles are installed in each specific unit to secure cross flow of gases of combustion and tapered gas passes with resultant increase in steam output.

Other advantages claimed for these baffle constructions are: reduction of eddy currents, elimination of dead gas pockets and restrictive gas passages that increase draft loss without promoting heat-transfer.

Bul on Streamlined Boiler Baffles is issued by The Engineer Co., Dept. CP, 75 West St., New York 6, N. Y. When inquiring specify CP 2625 on handy form, pages 2 and 3.

For more information on product at right, specify CP 2626 . . . see information request blank between pages 2 - 3.

take one part scrap one part crude...



...mix well 24 hours a day. Yield: 3 million pounds of rubber a month.

It takes a 3-story mixer and plenty of power to follow this recipe. Central Rubber and Steel have both—the largest Banbury Mixer ever driven by a diesel—and the power for mixer, lights and motors in their new Fairbanks-Morse 1200 horsepower Opposed-Piston Diesel.

Fairbanks-Morse Performance . . . so often the answer to Industry's problems.

Fairbanks, Morse & Co., Chicago 5, Illinois.



FAIRBANKS-MORSE

a name worth remembering when you want the best

DIESEL AND DUAL FUEL ENGINES • DIESEL LOCOMOTIVES • RAIL CARS • ELECTRICAL MACHINERY
PUMPS • SCALES • HOME WATER SERVICE EQUIPMENT • FARM MACHINERY • MAGNETOS



Typical Van-Cor
pipes and fittings
fabricated to speci-
fications by Van Dorn

Van-Cor

INDUSTRIAL PLASTICS—

✓ Both Chemically Resistant and
Impact Resistant Types

✓ Tensile Strength of Aluminum,
with one-half its weight

✓ Readily Formed, Machined,
Drawn Molded or Welded

AVAILABLE FORMS

SHEETS $\frac{1}{8}$ " through 1"

PIPE $\frac{1}{2}$ " through 6" diameter (10ft. lengths)

ROUND BARS $\frac{1}{4}$ " through 2" diameter (10ft. lengths)

WELDING ROD $\frac{1}{8}$ " and $\frac{3}{16}$ " diameter

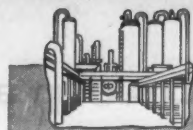
TYPICAL APPLICATIONS

Van Dorn fabricates its Van-Cor rigid non-plasticized polyvinyl chloride into such products as: Ducts, Hoods, Chemical Tanks, Tank Liners, Plating Racks, Fume Stacks and Piping.

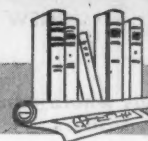
WRITE FOR ILLUSTRATED BULLETIN
AND SPECIFICATIONS

INDUSTRIAL DIVISION OF
COLONIAL PLASTICS MFG. CO.

SUBSIDIARY OF
THE VAN DORN IRON WORKS CO.
2685 East 79th Street • Cleveland 4, Ohio



Processing and Engineering Data



50

Sizing and Selecting Vacuum Pumps

Data supplied by F. J. STOKES MACHINE COMPANY

IN SELECTING a vacuum pump to accomplish a job in a given time (or in estimating time required for pump-down to a given pressure with any pump) there are five important factors to be considered:

- 1) vacuum required
- 2) size of system
- 3) nature and quantity of gases and vapors to be handled
- 4) pump-down time
- 5) frequency of pumping system down to operating vacuum

Chart given here simplifies pump-size and time calculations.

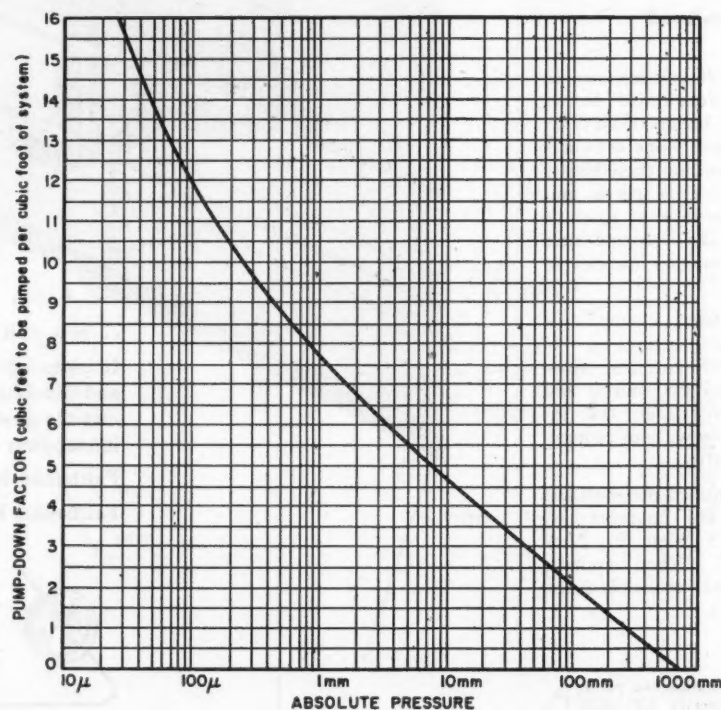
Typical Examples

Select a pump to evacuate a 350 cubic foot system to 5 mm in 10 minutes.

From the chart, determine that to reach 5 mm, 5.6 cubic feet must be pumped for each cubic foot of system. Thus (5.6 x 350) or 1960 cubic feet must be pumped in the allotted time of 10 minutes. This will obviously require a pump having a capacity of 196 cfm or slightly more.

How long will it take a 60 cfm pump to bring a 225 cubic foot system down to 450 microns?

At 450 microns, chart shows that 9.0 cubic feet must be pumped for every cubic foot of system. Thus (9.0 x 225) or 2025 cubic feet must be pumped. At 60 cfm, this would take 33.8 minutes.



Miracles from Molds

(Continued from page 7)

get needed equipment into place and operating fast enough to meet demand. New equipment and plants managed by H. L. Denzler (Brooklyn plant), W. E. Elwood (Groton plant), and B. J. Quinn (Terre Haute plant) kept production at top levels all along the way. And D. C. McClaine, head of the engineering department was kept very busy installing and designing new equipment to meet their needs.

Why was there such a strain to meet production requirements? The volume of antibiotic production in the US comes as a surprise to most people. Total production of antibiotics in 1951 (the last year for which figures are available) was over *one and one quarter million pounds*. Pharmaceuticals have become a billion dollar industry and are still growing. Antibiotics account for more than one-quarter of pharmaceutical sales.

Now Where?

Each passing day makes the pat complacency of the turn-of-the-century harder to understand . . . and it becomes easier to feel that everything is possible to science. It becomes harder to find technical men who will venture to prophesy. Nonetheless, there are these interesting developments already under study in laboratories.

New antibiotics for uses much like those of present standbys are under investigation or in production.

One of the new ones, Magnamycin, is specifically aimed at germs which have learned to put up with other antibiotics. In one type of infection, fifty strains of bacteria were tested — 27 resisted penicillin; 5 resisted Magnamycin.

Combinations of antibiotics and chemical agents may be the key to some therapies. Already streptomycin and isoniazid have been combined (and named streptomycin) to fight tuberculosis. And Viomycin, another antibiotic has been developed for the "sophisticated" tuberculosis organism.

Pfizer encouraged livestock people a while back with their studies showing that Terramycin added to animal diets can boost growth significantly. They went on to develop synthetic sow's milk, containing Terramycin. Most recently they have discovered that antibiotics can speed the growth of some plants. Corn plants grown under identical conditions, except that one group was treated with Terramycin, showed these results after four weeks growth: Weight of treated corn — 45 grams; weight of untreated corn — 23 grams.

This is by no means a comprehensive list of work which is underway — we can expect that there will be some new miracles as men like the Pfizer team learn more about molds and what they can do for us.

Processing and Engineering Data
begins on page 168 of this issue

We make

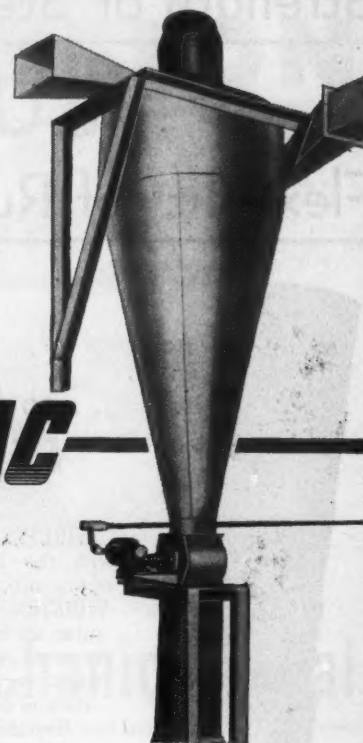
"PIPE DREAMS"

come true

SPROUT-WALDRON
equipment and systems for

**HANDLING • MOVING • LOADING
UNLOADING BULK MATERIALS**

PNEU-VAC



Sprout-Waldron's Pneu-Vac will probably bring reality to your plant engineer's dream of truly efficient materials handling . . . because with Pneu-Vac you can convey powdered, granular and flaky materials *anywhere you can run a pipe!*

In many modern plants, Pneu-Vac (a negative pressure system) is rapidly replacing bucket elevators and screw conveyors, because it has greater flexibility, offers many savings, and eliminates contamination and infestations of insects and rodents.

One of its many advantages is its ability to convey friable materials with negligible reduction of particle size.

Specially engineered for individual processing needs, Pneu-Vac is self-cleaning and can be designed to aerate, cool and dry. It eliminates dust, reduces hazards and improves working conditions. Pneu-Vac is swift, sanitary, safe and saves time, labor, space and money!

Sprout-Waldron materials handling equipment and systems are being used today in thousands of conveying jobs in the proc-

essing and other industries. Here is what Sprout-Waldron can offer you . . .

1. *Pneu-Vac, spiral, belt and bucket conveying systems for a wide range of applications.*
2. *A broad background in solving many types of conveying problems.*
3. *Complete facilities for engineering, pilot testing and fabrication.*

Write to: Sprout-Waldron & Co., Inc.
10 Logan Street, Muncy, Pennsylvania



SPROUT-WALDRON

Manufacturing Engineers

M U N C Y • P E N N S Y L V A N I A

MODERN EQUIPMENT FOR: Size Reduction • Mixing and Blending • Bulk Materials Handling • Product Classification • Pelletizing & Cubing

When inquiring check CP 2628 on handy form, pgs. 2-3

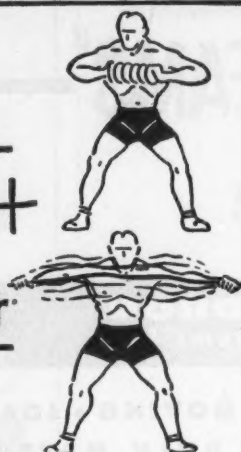
Republic
WIRETEX

AIR HOSE

Strength of Steel

PLUS+

Flexibility of Rubber



...and there's a **NEW**
ECONOMY LENGTH

WIRETEX, combining the strength of steel with the flexibility of rubber, brings you economical hose performance. Republic WIRETEX Air Hose easily handles air pressures up to 2,000 psi — and is ideally suited to work on less rigorous jobs, too, where extra service life and trouble-free performance is an asset.

Republic WIRETEX is NEW — a truly modern conductor internally reinforced with high tensile wire. It's easy to handle, unbelievably tough and long lasting. What's more, Republic WIRETEX is built in 60-foot Economy Lengths. You save money when you buy Republic WIRETEX; time and money when you use it! Get the facts today! Republic WIRETEX Hose is available in all standard ($\frac{3}{8}$ " to 2" inclusive) sizes.



Your local Republic Distributor can help you plan, select, apply and maintain any Product of Industrial Rubber. If he is not listed in the yellow section of your telephone directory, write us for his name and address.

"Quality Hose Builders for More Than 50 Years"

REPUBLIC RUBBER DIVISION

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS

When inquiring check CP 2629 on handy form, pgs. 2-3

NEW LITERATURE

Three bulletins describe valves, rotary joints

Rotary pressure joints, a check valve, and a pressure relief valve are described in three bulletins — each piece of equipment in a separate one.

Bulletin describing rotary pressure joint includes photos, sectional drawings, and specifications. Joint is self-aligning and equipped with a self-adjusting wear take-up. It is available in all pipe sizes from $\frac{1}{4}$ to 5", for use with or without a syphon. Joint can be supplied to withstand chemical reactions of materials to be handled.

Check valve is illustrated in second bulletin, and characteristics are pointed out in sectional drawings. Valve can be made to withstand chemical reactions of materials being handled. It is available in aircraft pipe sizes (forged aluminum), and standard pipe sizes (steel) for commercial applications.

Pressure relief valve, presented in third bulletin, features only one moving part. Both the in-line and side-port types are described. As were the other products, each type valve is available in materials to suit the application. They are produced in both aircraft and standard pipe sizes.

Bulletins on valves and rotary joints are issued by Anco, Inc., Dept. CP, One Baker St., Providence, R. I. When inquiring specify CP 2630 on handy form, pages 2 and 3.

Three basic AC welders described in booklet

Seventeen-page booklet describes three basic AC welding machines and their accessories.

Pointing to the great variety of AC welding applications, booklet shows how (1) a general purpose unit, (2) a 200 amp welder with a built-in high frequency stabilizer, and (3) a general and special purpose 80 v machine, provide the answers to practically any AC welding problem.

Each basic type of welder is described from the standpoints of construction, operation, and ap-

CUTTING COMPLAINTS



A pinch of dust or grit at your assembly line inspection bench or in the packing and shipping room can cause very expensive service calls later on. Spencer Vacuum is easily piped to each room and bench. It will speed production—save time in general cleaning and with special attachments, can collect water, pick up welding flux, reclaim materials and do 130 other jobs that are too expensive by hand. Ask for Bulletin No. 144.



THE SPENCER TURBINE COMPANY • HARTFORD 6, CONNECTICUT

SPENCER
HARTFORD

466-N

When inquiring check CP 2631 on handy form, pgs. 2-3

PUMP HIGHLY CORROSIVE FLUIDS & ABRASIVE SLURRIES

NEW POLYETHYLENE PUMPS

WITH NATURAL RUBBER, GUM, "NO STUFFING BOXES"
NEOPRENE, BUNA, MYCAR
"flex-i-liners"



ESPECIALLY DESIGNED TO
HANDLE HCl, HF, NaOH
H₂SO₄, DISTILLED H₂O
FeCl₃, Ca(OH)₂, and many
others

"FLUID NEVER
TOUCHES METAL"

VANTON

NON CORROSIVE
CONTAMINATING

flex-i-liner
PUMPS

Fluid only contacts outer surface of "FLEX-I-LINER" and inner surface of body block. 35 combinations of rubber and plastic "flex-i-liners" and pump body blocks. Models available from fractional to 20 G.P.M., Vinyl and Comp. "flex-i-liners" also available in pumps to 5 G.P.M. capacities. Widely used in chemical, food, pharmaceutical and other process industries—wherever non-contaminating pumping is required. Excellent for slurries. Write for literature.

NO GASKETS
NO VALVES
SELF LUBRICATING

VANTON PUMP CORP.

Empire State Bldg. Dept. CP-7 N.Y., N. Y.

When inquiring check CP 2632 on handy form, pgs. 2-3

CHEMICAL PROCESSING

GET THIS NEW DRUM PUMP Idea Book!

New ideas in fluids handling

May we show you what this amazing little Fast-Flo Drum Pump has done in industry after industry?

An air-operated reciprocating pump, the 13½ lb. Fast-Flo operates on air as low as 35 PSI. It screws directly into 2" drum bung openings, or can be clamped on tank sides. And Fast-Flo does not pressurize drums!

Fast-Flo can transfer, agitate, dispense . . . and be used as a supply pump for applying, mixing or spraying. It handles an almost unbelievable range of materials, many as thin as isopropyl alcohol, many as thick as cookie frostings.

SEND FOR
FREE
COPY



GRACO
Fast-Flo
**UNIVERSAL
DRUM PUMP**

One of the applications in this new Fast-Flo book may suggest a better way to handle one of your operations, saving time, labor and money. Write today!

GRAY COMPANY, INC.
72 GRACO SQUARE • MINNEAPOLIS 13, MINNESOTA
Regional Offices: New York, Philadelphia, Detroit, Chicago, Atlanta, San Francisco

When inquiring check CP 2633 on handy form, pgs. 2-3

WHEN BINS BECOME BOTTLENECKS... YOU NEED SPO AIR VIBRATORS



Don't let arching, bridging and clogging bottleneck your production . . . keep materials flowing from bins, hoppers and chutes with SPO air vibrators. These low-cost units deliver powerful hammer-like blows which eliminate jamming of powdered and granular materials.

Exclusive feature of SPO air vibrators is a special corrosion-proof bronze alloy cylinder liner which assures full-power start, high-speed operation, low air consumption and maximum service life.

1222-SI

Write today
for Bulletin 50.



SPO INCORPORATED

6531 GRAND DIVISION AVE. • CLEVELAND 25, OHIO

When inquiring check CP 2634 on handy form, pgs. 2-3

NEW LITERATURE

plication. Electrical specifications, physical dimensions, and weights of the various models are given; and special characteristics such as built-in power factor correction are described in detail.

Optional equipment and standard accessories include running gear, remote control attachments, high frequency arc stabilizers, and the usual helmets, electrode holders, and ground clamps.

Booklet B-5622 is issued by Westinghouse Electric Corp., Dept. CP, Box 2099, Pittsburgh 30, Pa. When inquiring specify CP 2635 on handy form, pages 2 and 3.

Demineralization of boiler feedwater discussed

Mixed bed and two-step demineralization are two processes utilizing the properties of cation and anion exchange resins to effectively reduce dissolved silica and solids in water in order to meet exacting specifications of high pressure boiler feedwater.

Commercial development of high capacity ion exchange demineralization apparatus now offers the possibility of producing economically, water both low in electrolyte content and dissolved silica. In fact, dissolved silica can be reduced to levels approaching 0.01 ppm.

These are the conclusions reached in a talk titled "Mixed Bed vs. Two-Step Demineralization of High Pressure Boiler Feedwater," which was presented at the American Power Conference, March, 1953.

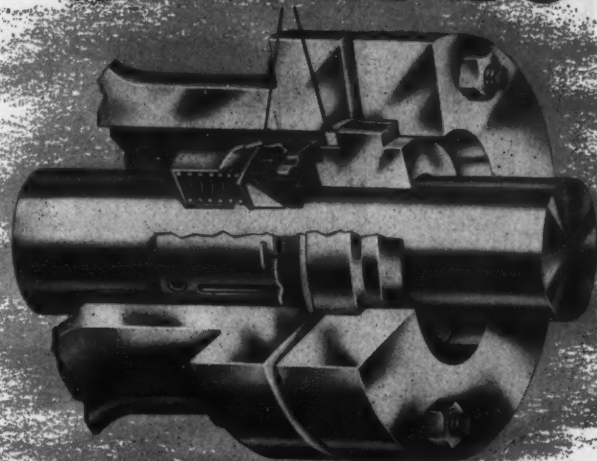
Sixteen-page bulletin, a preprint of the talk, describes the economic aspects of demineralizing various water supplies by utilization of the two methods. Cost comparisons are outlined, make-up water requirements are specified, curves, and illustrations are used to show the true economies of operation.

Bul 3836 is available from The Permutit Co., Dept. CP, 330 W. 42nd St., New York 36, N. Y. When inquiring specify CP 2636 on handy form, pages 2 and 3.

NOW—A SHAFT SEAL THAT WITHSTANDS ANY CHEMICAL.....

Designed
WITH

TEFLON



"JOHN CRANE" TYPE 9

Mechanical Seal

Prevents Leakage of:

- ✓ EXPENSIVE
CHEMICALS
- ✓ INFLAMMABLE
LIQUIDS
- ✓ TOXIC
GASES
- ✓ CORROSIVE
LIQUIDS
- ✓ SOLVENTS

Other John Crane Teflon Products include expansion joints, C-V Rings, packings and gaskets. Also, parts molded or machined to your particular requirements.

This revolutionary seal was developed by Crane Packing Company after two years research and field testing—expressly for use with hard-to-handle chemicals. Its flexible wedge ring and sealing ring are molded from the remarkable new plastic, Teflon, which is not affected under any known corrosive or solvent service.

John Crane engineers thus put the unique properties of Teflon—high heat resistance, extremely low friction and chemical inertness—to practical use in the Type 9 Seal. Result: a new, efficient way to handle corrosive liquids and gases that never before could be effectively controlled by conventional, flexible-type mechanical seals. It can be employed at temperatures up to 500°F.

The Type 9 Seal gives consistently dependable service on all rotating shaft applications, such as centrifugal pumps, turbines, speed reducers, positive displacement pumps and agitators.

Write today for new booklet describing the John Crane Type 9 Shaft Seal



CRANE PACKING COMPANY
1821 CUYLER AVE. • CHICAGO 13, ILLINOIS
Offices in All Principal Cities in United States and Canada



When inquiring check CP 2637 on handy form, pgs. 2-3

STOP VIBRATION

WITH KORFUND VIBRATION CONTROL AND

- Install Equipment Anywhere
(for better plant layout)
- Reduce Equipment Installation Cost
- Increase Production
- Reduce Maintenance
- Improve Employee Efficiency

Whether your problem is simple or complex, Korfund engineers will gladly recommend the easiest, most economical, effective solution. A half-century of experience is at your disposal. There are standard stock Korfund isolators for the majority of installations—special designs when necessary.

A selector chart is available, giving recommendations for both normal and critical conditions, for pumps, compressors, centrifuges, machine tools, presses, hammers and most other processing and mechanical equipment. Write us for your copy of Bulletin No. 12, or see our catalog in Sweet's Files.

For specific recommendations without obligation, contact us or the Korfund representative you'll find in most principal cities.



THE KORFUND CO., INC.

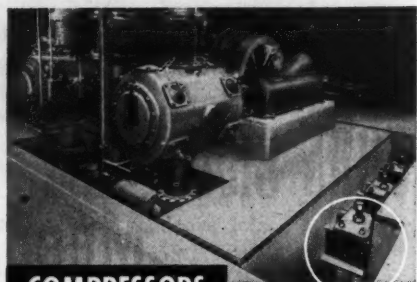
48-13E Thirty Second Place, Long Island City 1, N. Y.
In Canada: 510 Canal Bank, Ville St. Pierre, Montreal

When inquiring check CP 2638 on handy form, pgs. 2-3



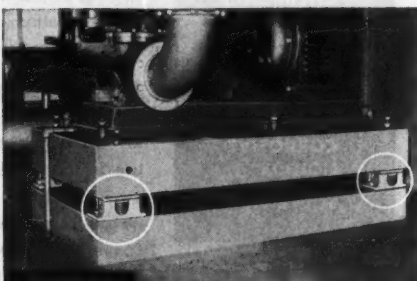
SHAKER SCREENS

Korfund Vibro-isolators installed under these shaker screens, located on a barge, stop vibration transmission into the deck without reducing the efficiency of the shaking action which removes shale cuttings from off-shore oil drilling mud. Another application—low cost upper floor screen installation without reinforcing.



COMPRESSORS

Korfund Isolators permitted installation of five 250 H. P. duplex compressors in limited basement space actually overlapping building column footings—yet completely kept vibration from delicate bacteria cultures on upper floors of this pharmaceutical plant.



PUMPS

Korfund Vibro-isolators installed under this large pump and its driving motor completely stop transmission of vibration and objectionable noise to floors below.

NEW LITERATURE

Restful colors for plant interiors & machinery

Six-page color-chip folder illustrates and describes paints, called Restful Color Group, for plant interiors and machinery. Each of these paints is designed to harmonize perfectly with existing interior decorations and blend into an overall color scheme that will provide ideal work surroundings in plants, commercial buildings, and offices, according to manufacturer.

Applied to machinery, paints are said to have excellent resistance to penetration and discoloration of oil or grease. Paints may be applied to virtually any wall or ceiling surface provided it is not damp. All surfaces must be clean prior to application, and fillers are recommended for porous surfaces.

Form 125 is issued by Rust-Oleum Corp., Dept. CP, 2799 Oakton St., Evanston, Ill. When inquiring specify CP 2639 on handy form, pages 2 and 3.

Uses thyatron for level

Single-thyatron electric level control is described in 4-page folder. Printed in two colors, illustrated folder pictures instrument, explains principle of operation, special applications.

Bulletin points out that instrument does not apply radio frequency, but uses a single capacitive type probe.

Form LL4-453 is issued by Thermo Instruments Co., Dept. CP, 1166 El Camino Real, Belmont, Calif. When inquiring specify CP 2640 on handy form, pages 2 and 3.

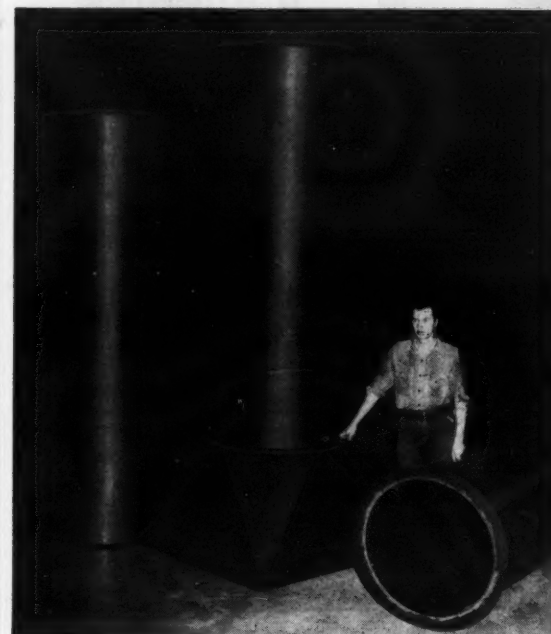
Relay data for design

Application and design information on control relays is available in booklet form.

Booklet B-5817 is issued by Westinghouse Electric Corp., Dept. CP, Box 2099, Pittsburgh 30, Pa. When inquiring specify CP 2641 on handy form, pages 2 and 3.

AGILENE The Most Economical Answer TO YOUR CORROSION PROBLEMS IN CHEMICAL PROCESS EQUIPMENT

Agile's thermoplastic construction material—AGILIDE unplasticized polyvinyl chloride—fabricated by the hot gas welding process is an economical safeguard for your properly engineered installations. It has a virtually limitless range of applications.



AGILIDE Acid Vapor-Exhaust Stack manufactured for Firestone Steel Products of Akron, Ohio. 31" outside diameter in three 9 foot flanged sections. An extremely large plastic construction project.

SEND YOUR INQUIRIES TO



American Agile Corporation

Plant and General Offices • 5461 Dunham Rd., Maple Heights, Ohio
Mailing Address, P. O. Box 168 • Bedford, Ohio

DEPT. C-1

When inquiring check CP 2642 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Explain differential transformer instruments from 3 angles

Set of three 4-page bulletins picture and explain components of all-electronic control systems. Systems themselves are built around differential transformers as primary measuring elements and these bulletins cover devices employing differential transformers.

Bul A-707 deals with differential pressure transmitter. Explanatory material is illustrated with photographs, cutaways and drawings to show principle of operation.

Bul A-708 covers a pressure transmitter in a similar manner. In both cases mounting information and dimensions are furnished.

Bul A-710 is concerned with a power relay which converts direct current values into proportional air pressure with a large amplification.

Bulletins are issued by The Swartwout Company, Dept. CP, 18511 Euclid Ave., Cleveland 12, Ohio. When inquiring specify CP 2643 on handy form, pages 2 and 3.

Latest weight, measure standards now available

Report of the 37th National Conference on Weights and Measures has now been printed. Publication contains addresses and reports on weights and measures given at NBS conference in May, 1952. Topics included are: weighing tomatoes in retail cartons, flour weights, use of word "net" in quantity statements, standardization of packages, etc. Especially interesting to chemical industry will be "Measurement of Petroleum," railway track scale testing, belt conveyor scales, and vehicle tank meters.

To obtain National Bureau of Standards Miscellaneous Publication 206, remit 40c to Government Printing Office, Dept. CP, Washington 25, District of Columbia.

Describes characteristics of dosimeter

Illustrated sheet gives complete description of three-quarter ounce dosimeter and a portable charging unit for it. Instrument itself is simple and rugged. Carried by personnel liable to be exposed to dangerous ionizing radiation, dosimeter is similar to, but smaller than, a fountain pen. In order to read amount of radiation to which it has been exposed, it is held up to the light as a telescope would be.

Information about charging unit explains construction, uses, and gives performance data.

Bulletin 106A is issued by Arnold O. Beckman, Inc., Dept. CP, 1020 Mission St., South Pasadena, Calif. When inquiring specify CP 2644 on handy form, pages two and three.

Water Vapor Won't Condense in this NEW HIGH VACUUM ROTARY PUMP

Maintains initial cfm rate when pumping water vapor

Eliminates oil reclaiming unit

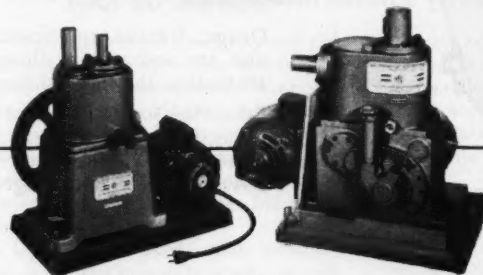
Greater capacity under 1 mm Hg

Up to 80' less oil charge

Capacities from 1 1/4 cfm to 400 cfm

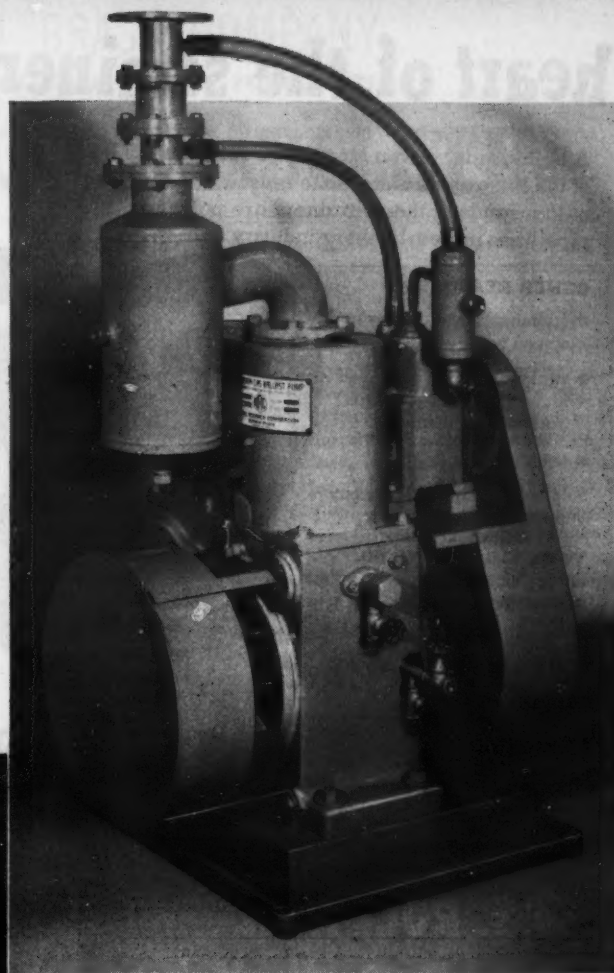
Pressures down to 10⁻⁴ mm Hg

The new NRC Rotary Gas Ballast Pump actually prevents water vapor from condensing, and contaminating the pump oil. Therefore, unlike all other type rotary vacuum pumps, fast pump down time is maintained when pumping condensable vapors. This is important news wherever vacuum is used.



Vane-type pump
Model NRC6S

Piston-type pump
Model NRC30S



NRC Rotary Gas Ballast 2-stage Pump — Model NRC100M

NRC Rotary Gas Ballast Pumps are available in capacities from 1 1/4 cfm to 400 cfm; pressures down to 10⁻⁴ mm Hg; a full line of vane, piston-type and 2-stage pumps.

Send coupon today, for your copy of the new bulletin that gives a full explanation of the Gas Ballast principle, and complete engineering data on the construction and operation of the NRC Rotary Gas Ballast Pump.



**National Research
Corporation**

EQUIPMENT DIVISION, 70 Memorial Drive, Cambridge, Mass.

Send me more facts about the
NRC Rotary Gas Ballast Pump ☐

Have your
Salesman call ☐

Name

Title

Company

Address

When inquiring check CP 2645 on handy form, pgs. 2-3

heart of the strainer

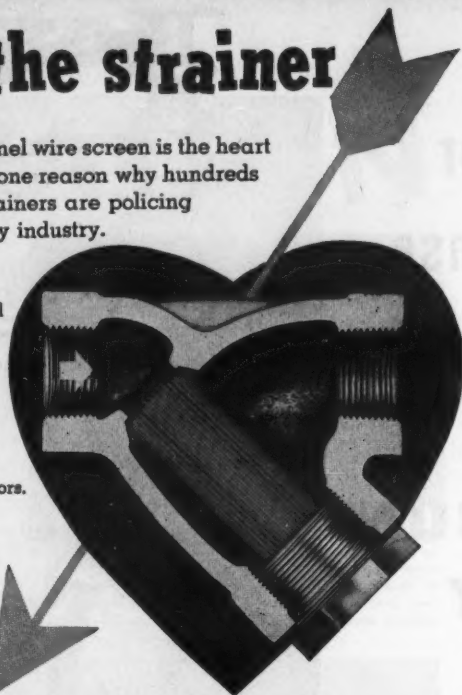
A high-grade, woven Monel wire screen is the heart of the Yarway Strainer—one reason why hundreds of thousands of these strainers are policing pipe lines in nearly every industry.

OTHER REASONS—

- cadmium plated bodies and screen caps
- straight threads, machined faces and spark-plug-type gaskets on screen caps
- ten sizes from 1/4" to 3"

Sold by 216 industrial distributors. Write for Bulletin S-203.

YARNALL-WARING CO.
125 Mermaid Ave.
Philadelphia 18, Pa.



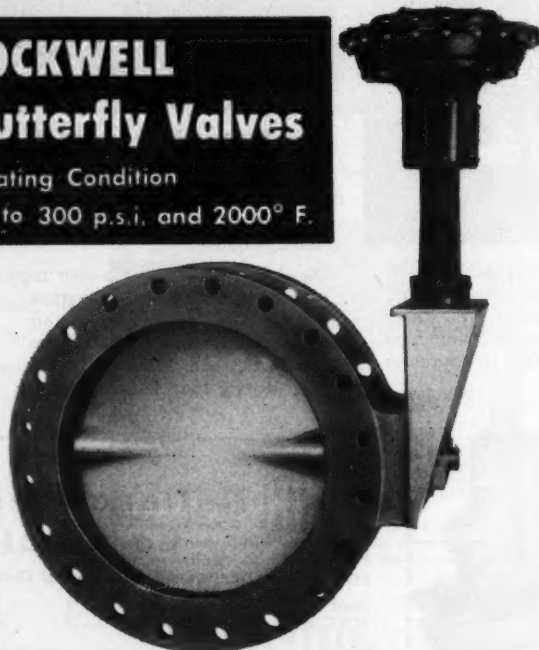
YARWAY STRAINERS

When inquiring check CP 2646 on handy form, pgs. 2-3

W. S. ROCKWELL Butterfly Valves

for Any Operating Condition
to 300 p.s.i. and 2000° F.

Minimum
Pressure Drop
•
Automatic or
Manual Control
•
of any metal
or rubber-lined
in sizes to 120"



W. S. ROCKWELL COMPANY

BUTTERFLY VALVES • SLIDE VALVES • AUTOMATIC VALVES

2203 ELIOT STREET • FAIRFIELD, CONN.
Sales Representatives in Principal Cities

When inquiring check CP 2647 on handy form, pgs. 2-3

NEW LITERATURE

Gives data on how to assemble first aid kits

To assist companies in the selection of equipment for first aid kits is a data sheet which includes a chart giving recommendations for some 25 occupations. The assortments of treatment and dressings are based on surveys, trade association recommendations, state regulations or National Safety Council recommendations as to what items are most generally used in a given industry.

The data sheet also contains a simplified accident and first aid report form as well as valuable information on first aid training and inspection and control. To obtain Data Sheet D-202 remit 17c direct to National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill. When inquiring specify CP 2648 on handy form, pages 2 and 3.

Less than 0.001 % impurities in spectrographic electrodes

Manufacturer of spectrographic electrodes claims that his product contains less than 0.001% impurities in contrast to amounts in the order of 0.02 to 0.05% in normal graphite electrodes. High-purity electrodes are supplied in lengths up to 12 inches long and in diameters of 1/8, 3/16, 1/4 and 5/16 inch.

Spectrographic electrodes and numerous other carbon and graphite products and materials are described in recently issued catalog.

Cat 40A is available on letterhead request to Stackpole Carbon Co., Dept. CP, St. Mary's, Pa.

Automatic titration instrument speeds moisture analyses

Designed to permit "push-button" moisture testing, high-speed electronic device analyzer for moisture automatically. Instrument utilizes the Karl Fischer "dead-stop" reaction for measurement of moisture content of many materials including paper, foodstuffs, petroleum products, alcohols, pharmaceuticals, ethers, animal tissue, antibiotics and blood.

Design, features, specifications and operation of unit are outlined in illustrated, 4-page folder. Illustration shows 12 different features of unit.

Data File 307-11 is issued by Beckman Instruments, Inc., Dept. CP, 820 S. Mission St., South Pasadena 1, Calif. When inquiring specify CP 2649 on handy form, pages 2 and 3.

Helpful guide aids in selection of radioactivity instruments

In addition to specific descriptions for a variety of instruments useful in radiochemistry, informative booklet contains a separate section which is devoted to helping a new worker using radio-



Every
Article in
**CHEMICAL
PROCESSING**
is
"Staff Written"

Every article in **CHEMICAL PROCESSING** is terse, brief, to-the-point . . . yet packed with essential facts of developments important to every man in chemical processing.

For every article is "Staff Written." Our Editors dig out the vital news-facts, then write them in the fewest possible words. That's why you read so much . . . keep up with developments . . . in short reading time. You don't have to "wade through" long, hard-to-read articles.

That's why you don't find these articles signed . . . every one is "Staff Written." It's the most difficult kind of editing, but it pays big dividends to every busy reader.



activity select the proper type of equipment he will need for any particular type of counting work. Laboratory instruments described include a sample changer, medical counting system, personnel monitoring systems and other equipment for detection and measurement of radioactivity.

Cat M is issued by Nuclear Instrument & Chemical Corp., Dept. CP, 229 W. Erie St., Chicago, Ill. When inquiring specify CP 2650 on handy form, pages 2 and 3.

Discusses instrument approach to control of flow

Comprehensive, 16-page bulletin discusses instrumentation for flow measurement and control. Printed in three colors, booklet is complete with many drawings and photographs illustrating typical control systems and the instruments used.

Text first covers factors important in controlling flow, then turns to liquids, compressible fluids, ratio control, and program control in succession. Remote pneumatic instruments are also discussed.

Specifications and instrument descriptions are included. Bul 355 is issued by The Foxboro Co., Dept. CP, Foxboro, Mass. When inquiring specify CP 2651 on handy form, pages 2 and 3.

Summarizes proceedings of meeting of specialties manufacturers

Detailed volume includes reprints of various addresses and technical papers delivered at the 39th annual meeting of the Chemical Specialties Manufacturers Association. Included also are reports of several committees and special award addresses.

Among the various papers reprinted are several in the fields of aerosols, automotive products, disinfectants and sanitizers, insecticides, soaps, detergents, and waxes and floor finishes.

To obtain "Proceedings — 39th Annual Meeting of Chemical Specialties Manufacturers Association, Inc." remit \$7.50 direct to Chemical Specialties Manufacturers Association, Inc., Dept. CP, 110 E. 42nd St., New York 17, N. Y.

Gives specs on speed reducers designed for cooling towers

Complete specifications on worm gear speed reducers for cooling towers are given in 8-page, 2-color bulletin. Detailed drawings and pictures supplement text. Extensive rating tables are included along with information on lubrication and installation. Additional uses of the cooling tower drive are also mentioned.

Bul 135-R is available from The Cleveland Worm and Gear Co., Dept. CP, 3267 E. 80th St., Cleveland 4, Ohio. When inquiring specify CP 2652 on handy form, pages 2 and 3.

BRIDGEPORT BRASS COMPANY

CONDENSER AND HEAT EXCHANGER TUBE EDITION

COPPER ALLOY BULLETIN



MILLS IN BRIDGEPORT, CONN. AND INDIANAPOLIS, IND.—IN CANADA: NORANDA COPPER AND BRASS LIMITED, MONTREAL



Announcing Bridgeport's New "Condenser and Heat Exchanger Tube Handbook"

**For a better understanding of tube corrosion
and maintenance problems**

Which condenser tube alloy will give the best service life? To help solve this problem Bridgeport Brass Company has published a 156-page book which deals with the properties of available copper-base alloys for condenser tubes and their applications in the chemical, petrochemical, processing industries, power and marine fields.

Copper and copper alloy tubes are used for conveying corrosive liquids, exchanging heat, refrigeration, steam generation, reclaiming waste heat, evaporating, distilling, condensing, fractionating, extracting oil by means of solvents, etc.

Tubes carry many processing liquors, cooling waters, gases, acids, salts, bases, and organic compounds in water and other solvents. Each application requires careful study and sometimes experiments by trial in service.

Causes of Corrosion

The new book deals with corrosion problems. Much information is based on facts developed through laboratory corrosion research and field tests. Such data when correlated with actual operating experience are helpful in specifying which alloys will give best results for specific applications.

A large section of this book is devoted to corrosion from water which is probably the most widespread cause of corrosion. This subject has been covered from such angles as effects of alloy composition, water composition, pH values, soluble salts, dissolved gases, protective and nonprotective films, bio-fouling, oxygen concentration, impingement, foreign matter, dezincification, temperature, inhibitors, etc. Also dealt with are galvanic corrosion, causes of stress corrosion cracking, effects of vibration, and steam erosion-corrosion.

Time Saving Tables

The new book carries many tables, data and formulas. It covers heat transfer rates and general specifications. Especially valuable is the comprehensive table listing in compact form the comparative properties of standard condenser tube alloys including such items as alloy composition, mechanical properties, physical constants, thermal and electrical data, fabrication properties and specification numbers.

Considerable space deals with the care, handling and storing of condenser and heat exchanger tubes; methods of installation; cleaning and removal of old tubes.

A portion of the book is devoted to various Duplex tubes combinations of ferrous and nonferrous alloys to offset the effects of two different corrosive media which may exist simultaneously on the outside and inside of the tubes. The applications of Duplex Tubing in industry are rapidly increasing.

How to Obtain a Copy

This valuable book can be of great help to engineers concerned with the selection of tubes, design, operation and maintenance of all types of condensers and heat exchanger equipment. You may obtain a copy by writing to Bridgeport Brass Company, Bridgeport 2, Connecticut, on your company stationery. If you have a corrosion problem, or require condenser and heat exchanger tubes, contact your nearest Bridgeport district office. Our Technical Service Department will be glad to help you select the correct alloy or Duplex Tubing combination which will give you the best service life. (101)

When inquiring check CP 2653 on handy form, pgs. 2-3

TABER

DRAINAGE WATER Protection....



FIG. 19,481

Costly damage, often caused by seepage water, floor drainage or unexpected water . . . can be best avoided by the installation of a dependable, rugged automatic vertical Taber Sump Pump like Fig. 19,481.

When an emergency arises, the thoroughness of Taber engineering and the ruggedness of Taber construction . . . combine to deliver the protection sought and paid for.

BULLETIN S-852 containing eight pages of construction and engineering details, along with rating tables, on request.

TABER PUMP CO. (Est. 1859)
208 Elm St. Buffalo 3, N. Y.

VERTICAL TABER SUMP PUMPS

When inquiring check CP 2654 on handy form, pgs. 2-3



it's
HINGED
for longer wear

**MASSCO-GRIGSBY
RUBBER PINCH VALVES
FOR ABRASIVE PULPS
AND CORROSIVE LIQUIDS**

*PATENTED

**The Mine & Smelter
Supply Co.**
DENVER 17, COLORADO

SIZES 1" to 12" dia.

WRITE FOR
**FREE
BULLETIN**

When inquiring check CP 2655 on handy form, pgs. 2-3

NEW LITERATURE

Principles and details of zeolite water softening

Twelve-page bulletin discusses principles and details of zeolite water softening. It explains the distinction between sodium cycle and hydrogen cycle of zeolite softening and graphically shows the differences in results obtained by the two processes.

This fundamental discussion is followed by a description of design and operation of equipment used in zeolite water softening and available methods for controlling the various operations in softening and regenerating processes.

An additional section describes various types of the most modern zeolite or ion exchange materials, illustrated with photographs of actual size and also photomicrographs of typical exchangers, and with a table of characteristics of cation exchangers most commonly used.

A final section of particular usefulness is an outline of a simple method of sizing zeolite softeners, with a table of recommended flow rates and an example showing how size of a softener would be determined to meet a specific requirement.

Bul WC-108 is issued by Dept. 234-8, Graver Water Conditioning Co., Dept. CP, 216 W. 14th St., New York 11, N. Y. When inquiring specify CP 2656 on handy form, pages 2 and 3.

Small plant maintenance discussed in leaflet

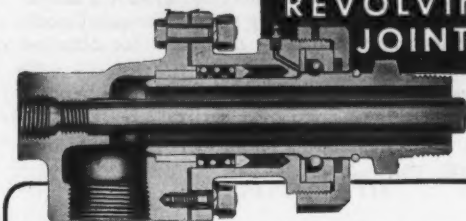
Designed to aid the small businessman in increasing the efficiency of his plant through an improved maintenance program, leaflet highlights main factors to be considered in improving plant maintenance operations.

Under separate headings, leaflet discusses plant maintenance functions, policy, duties involved in maintenance, important records to be kept, and general housekeeping.

Leaflet No 25, "Improving Maintenance Operations In Small Plants," is issued by Small Defense Plants Administration, Old Washington Post Bldg., 1337 E St. NW, Washington 25, D.C.

better
temperature
control
. . . less
maintenance

The Improved
BARCO
REVOLVING
JOINT



HERE is Barco's new, improved Type IBR Revolving Joint for supplying steam, water, oil, or other fluids to rolls, dryers, drums.

LOW TORQUE! Inherent low torque little affected by pressure, speed or temperature—thanks to special ball bearing used in combination with self-lubricating graphite-carbon bearing and new low torque long-life chevron packing.

LEAKPROOF AND LONG LIFE! Note wide spacing between bearings. Insures close alignment and long life for self-adjusting, self-sealing chevron packing.

EASY SERVICING! Internal parts readily accessible—usually without removing joint from roll. Sizes 1/4" to 2". Single flow or syphon styles. Steam: 150 p.s.i., 450°F., 500 RPM. Hydraulic: 200 p.s.i., 750 RPM.

Send for new Bulletin 300
BARCO MANUFACTURING CO.
537H Hough St., Barrington, Ill. (A Chicago Suburb)

When inquiring check CP 2657 on handy form, pgs. 2-3

NO RODDING NECESSARY!



**Strahman
RAM TYPE
Drain Valves**

**The Only Drain Valve
That Cannot Clog Up!**

In the closed position the piston or ram extends up into the tank, preventing plugging of the outlet.

In the open position with piston fully retracted, there is no resistance to flow of materials drained from the tank.

Made in any cast metal to meet your requirements.

Designed for bolting to existing flanges. For special adaptations and for jacketed vessels, adaptor pads are available.

Full
Specifications
on
Application

STRAHMAN VALVES, INC., 16 HUDSON STREET
NEW YORK 13, U. S. A.

When inquiring check CP 2658 on handy form, pgs. 2-3

Composition, application, uses of cork insulation

Illustrated, 8-page bulletin gives composition, application data, and uses of manufacturer's cork insulation. Material is described as being a cold-application fluid type composed of highly efficient insulating fillers of cork and asbestos, with a bituminous base possessing unusual adhesive, water-proofing, and corrosion-proofing qualities. It is applied directly from the drum by hand-operated spray guns.

Complete data as to proper thickness and coverage are given as well as material's qualifications for water-proofing and seam sealing, vibration dampening, sound deadening, and insulating.

Bul 53-4 is available from Witco Chemical Co., Pioneer Asphalt Div., Dept. CP, 75 E. Wacker Dr., Chicago 1, Ill. When inquiring specify CP 2659 on handy form, pages 2 and 3.

Outlines several advantages of grating spectrographs

A grating, in the visible spectrum, gives higher dispersion and resolution; it spreads the spectrum lines further apart and distinguishes them more clearly as individual lines. Higher orders of a grating spectrograph provide still greater resolution and dispersion. In addition, the dispersion of a grating is almost linear with respect to the wave-length.

These and other features of grating spectrographs are described in an informative, 16-page catalog. Numerous photographs and drawings illustrate the text material.

Cat G2-53 is issued by Jarrell-Ash Co., Dept. CP, 26 Farwell St., Newtonville, Mass. When inquiring specify CP 2660 on handy form, pages 2 and 3.

Shows how sensory testing can improve a product

Covering many of the flavor and odor problems of the food, drug, beverage, plastics, rubber, textile and detergents industries, booklet outlines several of the advantages which can result from scientific analysis of flavor and odor by the panel method. In short — it shows how sensory testing can improve a product.

Booklet explains how an organoleptic panel functions, tells how its results are evaluated and lists the advantages which can be obtained by its use. It also presents several case histories in which manufacturers of various products have benefitted from this method.

"Scientific Analysis of Flavor and Odor" is issued by Evans Research and Development Corp., Dept. CP, 250 E. 43rd St., New York 17, N. Y. When inquiring specify CP 2661 on handy form, pages 2 and 3.



SMOKE BLOWN THROUGH a Norton ALUNDUM® seamless tube escapes throughout the tube's entire area. Such a tube gives most efficient filtration and ease of cleaning by back washing. When selecting tubes for your specific application be sure they embody this important feature.

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries

NORTON

POROUS MEDIUMS

Making better products to make other products better

NORTON COMPANY, WORCESTER 6, MASSACHUSETTS

Why Norton seamless tubes give you better filtration

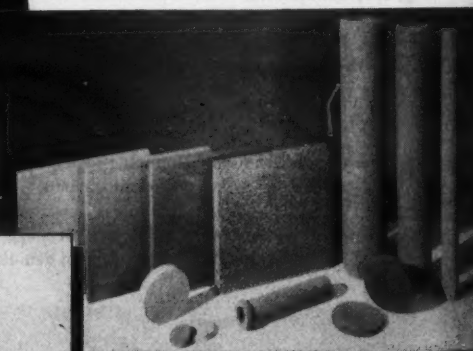
Only Norton ALUNDUM tubes have the seamless construction that means more uniform filtration and enables faster, more thorough cleaning. And like all Norton porous mediums they're made with the patented *controlled structure* process that assures even distribution of pores — in the size and open-pore ratio that best meets your needs.

Cost-cutters over a wide job range

In any form, Norton porous mediums have exceptional resistance to breakage, chipping and acid and alkaline conditions. They're designed to perform better, last longer and cut your operating costs in a wide variety of chemical field applications. For example: filtering water or solvents . . . cutting oils, wine and other liquids . . . reclaiming cleaning fluids and industrial waste . . . in boiler feed water treatment.

Get the whole story

See your Norton Representative for complete facts on how you can get more savings and satisfaction with Norton porous mediums. Or write describing your requirements, to NORTON COMPANY, 566 New Bond St., Worcester 6, Mass. *Canadian Representative:* A. P. Green Fire Brick Co., Ltd., Toronto, Ontario.



NORTON ALUNDUM POROUS MEDIUMS are available as tubes, plates and discs in a wide range of sizes.

When inquiring check CP 2662 on handy form, pgs. 2-3

FOR 50 YEARS
PURITY
UNIFORMITY
SERVICE

Specify **EL DORADO**
coconut oil fatty acids
for batch-to-batch
UNIFORMITY

You can rely on *quality* . . . and batch-to-batch uniformity when you specify El Dorado coconut oil fatty acids or methyl esters. One big reason is because El Dorado has specialized in coconut oil products for a half century.

Economy? El Dorado's rigid quality control reduces your production costs and guarantees greater uniformity in your finished products. Saves a lot of processing headaches for you, too.

FATTY ACIDS:

Caprylic • Capric • Lauric • Myristic
Palmitic

METHYL ESTERS:

Caproate • Caprylate • Caprate • Laurate
Myristate • Palmitate

For samples and specifications,
write Dept p

EL DORADO
SINCE 1892
OIL WORKS

MAIN OFFICE: 311 California Street
San Francisco, Calif.
PLANTS: Bayonne, New Jersey
Oakland, Calif.

When inquiring check CP 2663 on handy form, pgs. 2-3

Help your product *Sell itself* with these AMINES...

- **Aminoethylethanolamine** — for textile finishing compounds, surface active agents.
- **Ethylenediamine** — an intermediate for fungicides, pharmaceuticals, thermoplastic resins.
- **Diethylenetriamine** — catalyst for epoxide resins; for addition agents to improve spreading of oily substances on glass and stone.
- **Triethylenetetramine** — for ion exchange resins in water purification; for antifoaming agents.
- **Tetraethylenepentamine** — for ion exchange resins in sugar refining; for crude petroleum demulsifiers.

Carbide and Carbon Chemicals Company

A Division of Union Carbide and Carbon Corporation

30 East 42nd Street **UNION** New York 17, New York

Offices in Principal Cities

In Canada: Carbide and Carbon Chemicals, Limited, Toronto

When inquiring check CP 2664 on handy form, pgs. 2-3

NEW LITERATURE

**Long life repairs given
by patching material**

An iron-asphalt patching material which is said to produce repairs that last a long time and make possible easy, fast patching or resurfacing of worn concrete floors is described in 6-page, illustrated bulletin.

According to manufacturer, this material overcomes problem of early breakdown under impact, particularly of feather-edges. Ability of material to withstand impact results from use of ductile, metallic aggregate in place of brittle materials. Comprising 75% of composition of material, metallic aggregate reportedly makes feather-edging easy and provides serviceability when patching is properly bonded to old concrete surface.

Other advantages are said to be — no chipping or other extensive work required to prepare surface; no special material required for bond; no tamping necessary, material is simply placed and trowelled; applied thin, from 1/4" down to feather-edge; bonds effectively to old surface; produces a spark-resistant floor; ready for traffic 24-36 hr after placing.

Bul MQ-4 on Masterquick is issued by The Master Builders Co., Dept. CP, 7016 Euclid Ave., Cleveland 3, Ohio. When inquiring specify CP 2665 on handy form, pages 2 and 3.

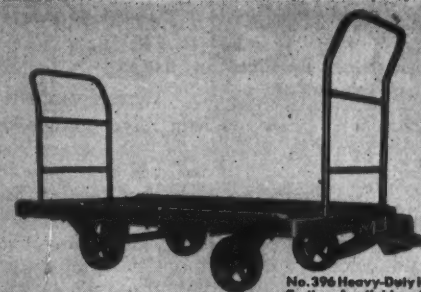
**Detailed mineral jig
data covered**

Twenty-page bulletin gives detailed data on company's mineral jig that treats unclassified, un-sized feed and recovers minerals as soon as freed.

Various sections are devoted to unit's advantages, operation, mechanical construction, specifications, application, and uses in the laboratory.

Application section includes drawings of jig installations in various types of plants where mineral recovery is a factor.

Bul J2-B10 is issued by Denver Equipment Co., Dept. CP, 1400 17th St., Denver 17, Colo. When inquiring specify CP 2666 on handy form, pages 2 and 3.



No. 396 Heavy-Duty Industrial Trailer. Available with "Job-Solled" Superstructures.

**For Tractor Trailer Operation
2-TON HEAVY-DUTY
INDUSTRIAL TRAILER**

This Thomas "GENERAL" is doing a thousand heavy-duty jobs all over the world—in freight stations, warehouses, industrial plants, wherever a staunch, easy-running, caster-type trailer of time-proved design is needed. Rugged. 4000 lbs. capacity. Foot operated release disengages Safety Automatic Coupler quickly, safely from either side. Available with chemical resistant tires.

THOMAS
TRUCK & CASTER CO.
417 Mississippi River
Keokuk, Iowa



Send
for free
literature

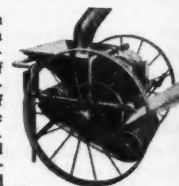
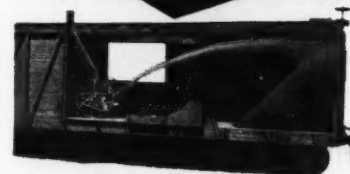
When inquiring check CP 2667 on handy form, pgs. 2-3

**Fill Cars
FASTER**

with an

S-A

**BOX CAR
LOADER**



One man, with an S-A Box Car Loader, can make quick work of loading and trimming a box car. The loader operates without attention after it is placed in the car, and flow of material is started. This handy machine automatically loads and trims in a fraction of the time required by hand methods. Exposure of operator to dust is reduced to a minimum. Save time and manpower with this standard S-A portable loader. . . . Handles loose granular material up to 2-inch lump size. Mail coupon for bulletin 948.

**MAIL
COUPON
FOR
FULL DATA**

STEPHENS-ADAMSON MFG. CO.
Standard Products Division
11 RIDGEWAY AVE., AURORA, ILL.
Please send me Bulletin 948
on S-A Box Car Loaders.

Name.....
Company.....
Address.....
City.....Zone.....State.....

When inquiring check CP 2668 on handy form, pgs. 2-3

Convention & Exhibit

Schedule

1953

Aug. 19-21. Western Electronic Show & Convention, Civic Auditorium, San Francisco, Calif.

Aug. 24-28. X-ray Diffraction School, Sir Francis Drake Hotel, San Francisco, Calif.

Aug. 31-Sept. 1. Natural Resources Research Institute, University of Wyoming, third biennial briquetting conference, Banff Springs Hotel, Alberta, Canada.

Sept. 6-11. American Chemical Society, 124th National Meeting, Chicago, Ill.

Sept. 13-16. Electrochemical Society-104th meeting, Wrightsville Beach, North Carolina.

Sept. 13-16. American Institute of Chemical Engineers, Fairmont and Mark Hopkins Hotels, San Francisco, California.

Sept. 17-19. American Association of Textile Chemists and Colorists, annual convention, Conrad Hilton Hotel, Chicago, Ill.

Sept. 21-25. Instrument Society of America, Eighth National Instrument Conference and Exhibit, Chicago, Illinois.

Oct. 6-8. Electric League of Western Pennsylvania, Fourth Industrial Electric Exposition, William Penn Hotel, Pittsburgh, Pa.

Oct. 8-9. Society of the Plastics Industry, New England section meeting, Equinox House, Manchester, Vermont.

Oct. 12-16. National Association of Corrosion Engineers, short course on cathodic protection, University of Illinois, Urbana, Ill.

Oct. 19-22. Society of Industrial Packaging & Materials Handling Engineers, short course, Mechanics' Hall, Boston, Mass.

Oct. 19-23. National Safety Council, 41st National Safety Congress and Exposition, Chicago, Ill.

Oct. 26-27. National Association of Suggestion Systems, annual meeting, William Penn Hotel, Pittsburgh, Pa.

Oct. 27. Association of Consulting Chemists and Chemical Engineers, Inc., 25th Anniversary Meeting, Hotel Belmont Plaza, New York, N. Y.

Oct. 29-31. Federation of Paint & Varnish Production Clubs, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.

Nov. 2-4. American Oil Chemists' Society, 27th Fall Meeting, Hotel Sherman, Chicago, Ill.

Nov. 17-18. American Institute of Electrical Engineers, conference on recording & controlling instruments, Benjamin Franklin Hotel, Philadelphia, Pennsylvania.

Dec. 13-16. American Institute of Chemical Engineers, Annual Meeting, St. Louis, Mo.



Keeping Pace with **PLASTICS!**

ROTO-CLONE sets dust-control pattern for both primary producers and fabricators

Plastics are going places! New materials—new applications are being developed daily. Dust problems have multiplied for primary producer and fabricator alike.

And the solution is the same as it has been for other of America's basic industries—AAF ROTO-CLONE* Dust-Control Equipment. In primary production, ROTO-CLONES exhaust the fine chemical dust from such operations as ball mill grinding, material handling and packaging. At point of fabrication, ROTO-CLONES again take over the complete dust collection job during molding and, later, on products finishing operations such as sanding, grinding, buffing, burnishing, machining, gear cutting, sawing and drilling.

Pictured above are two typical ROTO-CLONE applications in the plastics department of Allen-Bradley Co.,

Milwaukee, Wis., makers of motor controls. Main illustration shows battery of four molding machines from which dust is exhausted by a No. 12 Type D ROTO-CLONE. Inset pictures a finishing barrel which has been effectively hooded for removal of dust by another Type D unit.

The plastic industry is but one of many volume dust producers who value the constructive services of AAF engineers—the proven performance of ROTO-CLONE equipment. Whatever you produce, if dust is a problem—we'll take over from there. Call your local AAF representative or write direct.

*ROTO-CLONE is the trade-mark (Reg. U.S. Pat. Off.) of the American Air Filter Company, Inc., for various dust collectors of the dynamic precipitator and hydro-static precipitator types.



American Air Filter

COMPANY, INC.

258 Central Avenue, Louisville 8, Kentucky
American Air Filter of Canada, Ltd., Montreal, P. Q.

When inquiring check CP 2669 on handy form, pgs. 2-3

FOR 50 YEARS
PURITY
UNIFORMITY
SERVICE

Specify **EL DORADO**
coconut oil fatty acids
for batch-to-batch
UNIFORMITY

You can rely on quality . . . and batch-to-batch uniformity when you specify El Dorado coconut oil fatty acids or methyl esters. One big reason is because El Dorado has specialized in coconut oil products for a half century.

Economy? El Dorado's rigid quality control reduces your production costs and guarantees greater uniformity in your finished products. Saves a lot of processing headaches for you, too.

FATTY ACIDS:

Caprylic • Capric • Lauric • Myristic
Palmitic

METHYL ESTERS:

Caproate • Caprylate • Caprate • Laurate
Myristate • Palmitate

For samples and specifications,
write Dept p

EL DORADO
SINCE 1892
OIL WORKS

MAIN OFFICE: 311 California Street
San Francisco, Calif.
PLANTS: Bayonne, New Jersey
Oakland, Calif.

When inquiring check CP 2663 on handy form, pgs. 2-3

Help your product *Sell itself* with these AMINES...

- **Aminoethylethanolamine** — for textile finishing compounds, surface active agents.
- **Ethylenediamine** — an intermediate for fungicides, pharmaceuticals, thermoplastic resins.
- **Diethylenetriamine** — catalyst for epoxide resins; for addition agents to improve spreading of oily substances on glass and stone.
- **Triethylenetetramine** — for ion exchange resins in water purification; for antifoaming agents.
- **Tetraethylenepentamine** — for ion exchange resins in sugar refining; for crude petroleum demulsifiers.

Carbide and Carbon Chemicals Company

A Division of Union Carbide and Carbon Corporation

30 East 42nd Street **UCC** New York 17, New York

Offices in Principal Cities

In Canada: Carbide and Carbon Chemicals, Limited, Toronto

When inquiring check CP 2664 on handy form, pgs. 2-3

NEW LITERATURE

**Long life repairs given
by patching material**

An iron-asphalt patching material which is said to produce repairs that last a long time and make possible easy, fast patching or resurfacing of worn concrete floors is described in 6-page, illustrated bulletin.

According to manufacturer, this material overcomes problem of early breakdown under impact, particularly of feather-edges. Ability of material to withstand impact results from use of ductile, metallic aggregate in place of brittle materials. Comprising 75% of composition of material, metallic aggregate reportedly makes feather-edging easy and provides serviceability when patching is properly bonded to old concrete surface.

Other advantages are said to be — no chipping or other extensive work required to prepare surface; no special material required for bond; no tamping necessary, material is simply placed and trowelled; applied thin, from 1/4" down to feather-edge; bonds effectively to old surface; produces a spark-resistant floor; ready for traffic 24-36 hr after placing.

Bul MQ-4 on Masterquick is issued by The Master Builders Co., Dept. CP, 7016 Euclid Ave., Cleveland 3, Ohio. When inquiring specify CP 2665 on handy form, pages 2 and 3.

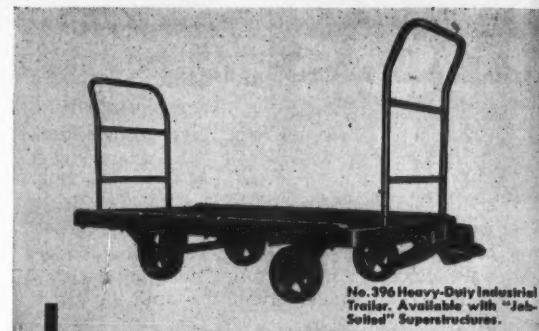
**Detailed mineral jig
data covered**

Twenty-page bulletin gives detailed data on company's mineral jig that treats reclassified, un-sized feed and recovers minerals as soon as freed.

Various sections are devoted to unit's advantages, operation, mechanical construction, specifications, application, and uses in the laboratory.

Application section includes drawings of jig installations in various types of plants where mineral recovery is a factor.

Bul J2-B10 is issued by Denver Equipment Co., Dept. CP, 1400 17th St., Denver 17, Colo. When inquiring specify CP 2666 on handy form, pages 2 and 3.



No. 396 Heavy-Duty Industrial Trailer. Available with "Job-Sold" Superstructures.

**For Tractor Trailer Operation
2-TON HEAVY-DUTY
INDUSTRIAL TRAILER**

This Thomas "GENERAL" is doing a thousand heavy-duty jobs all over the world—in freight stations, warehouses, industrial plants, wherever a staunch, easy-running, caster-type trailer of time-proved design is needed. Rugged. 4000 lbs. capacity. Foot operated release disengages Safety Automatic Coupler quickly, safely from either side. Available with chemical resistant tires.

THOMAS
TRUCK & CASTER CO.
417 Mississippi River
Keokuk, Iowa



Send
for free
literature

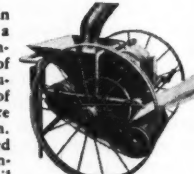
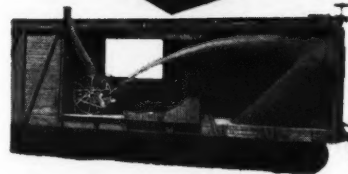
When inquiring check CP 2667 on handy form, pgs. 2-3

**Fill Cars
FASTER**

with an

S-A

**BOX CAR
LOADER**



One man, with an S-A Box Car Loader, can make quick work of loading and trimming a box car. The loader operates without attention after it is placed in the car, and flow of material is started. This handy machine automatically loads and trims in a fraction of the time required by hand methods. Exposure of operator to dust is reduced to a minimum. Save time and manpower with this standard S-A portable loader . . . Handles loose granular material up to 2-inch lump size. Mail coupon for bulletin 948.

MAIL
COUPON
FOR
FULL DATA

STEPHENS-ADAMSON MFG. CO.
Standard Products Division
11 RIDGEWAY AVE., AURORA, ILL.
Please send me Bulletin 948
on S-A Box Car Loaders.

Name.....
Company.....
Address.....
City.....Zone.....State.....

When inquiring check CP 2668 on handy form, pgs. 2-3

Convention & Exhibit Schedule 1953

- Aug. 19-21.* Western Electronic Show & Convention, Civic Auditorium, San Francisco, Calif.
- Aug. 24-28.* X-ray Diffraction School, Sir Francis Drake Hotel, San Francisco, Calif.
- Aug. 31-Sept. 1.* Natural Resources Research Institute, University of Wyoming, third biennial briquetting conference, Banff Springs Hotel, Alberta, Canada.
- Sept. 6-11.* American Chemical Society, 124th National Meeting, Chicago, Ill.
- Sept. 13-16.* Electrochemical Society-104th meeting, Wrightsville Beach, North Carolina.
- Sept. 13-16.* American Institute of Chemical Engineers, Fairmont and Mark Hopkins Hotels, San Francisco, California.
- Sept. 17-19.* American Association of Textile Chemists and Colorists, annual convention, Conrad Hilton Hotel, Chicago, Ill.
- Sept. 21-25.* Instrument Society of America, Eighth National Instrument Conference and Exhibit, Chicago, Illinois.
- Oct. 6-8.* Electric League of Western Pennsylvania, Fourth Industrial Electric Exposition, William Penn Hotel, Pittsburgh, Pa.
- Oct. 8-9.* Society of the Plastics Industry, New England section meeting, Equinox House, Manchester, Vermont.
- Oct. 12-16.* National Association of Corrosion Engineers, short course on cathodic protection, University of Illinois, Urbana, Ill.
- Oct. 19-22.* Society of Industrial Packaging & Materials Handling Engineers, short course, Mechanics' Hall, Boston, Mass.
- Oct. 19-23.* National Safety Council, 41st National Safety Congress and Exposition, Chicago, Ill.
- Oct. 26-27.* National Association of Suggestion Systems, annual meeting, William Penn Hotel, Pittsburgh, Pa.
- Oct. 27.* Association of Consulting Chemists and Chemical Engineers, Inc., 25th Anniversary Meeting, Hotel Belmont Plaza, New York, N. Y.
- Oct. 29-31.* Federation of Paint & Varnish Production Clubs, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.
- Nov. 2-4.* American Oil Chemists' Society, 27th Fall Meeting, Hotel Sherman, Chicago, Ill.
- Nov. 17-18.* American Institute of Electrical Engineers, conference on recording & controlling instruments, Benjamin Franklin Hotel, Philadelphia, Pennsylvania.
- Dec. 13-16.* American Institute of Chemical Engineers, Annual Meeting, St. Louis, Mo.



Keeping Pace with **PLASTICS!**

**ROTO-CLONE sets dust-control pattern
for both primary producers and fabricators**

Plastics are going places! New materials—new applications are being developed daily. Dust problems have multiplied for primary producer and fabricator alike.

And the solution is the same as it has been for other of America's basic industries—AAF ROTO-CLONE* Dust-Control Equipment. In primary production, ROTO-CLONES exhaust the fine chemical dust from such operations as ball mill grinding, material handling and packaging. At point of fabrication, ROTO-CLONES again take over the complete dust collection job during molding and, later, on products finishing operations such as sanding, grinding, buffing, burnishing, machining, gear cutting, sawing and drilling.

Pictured above are two typical ROTO-CLONE applications in the plastics department of Allen-Bradley Co.,

Milwaukee, Wis., makers of motor controls. Main illustration shows battery of four molding machines from which dust is exhausted by a No. 12 Type D ROTO-CLONE. Inset pictures a finishing barrel which has been effectively hooded for removal of dust by another Type D unit.

The plastic industry is but one of many volume dust producers who value the constructive services of AAF engineers—the proven performance of ROTO-CLONE equipment. Whatever you produce, if dust is a problem—we'll take over from there. Call your local AAF representative or write direct.

★ ★ ★

*ROTO-CLONE is the trade-mark (Reg. U.S. Pat. Off.) of the American Air Filter Company, Inc., for various dust collectors of the dynamic precipitator and hydro-static precipitator types.



American Air Filter COMPANY, INC.

258 Central Avenue, Louisville 8, Kentucky
American Air Filter of Canada, Ltd., Montreal, P. Q.

When inquiring check CP 2669 on handy form, pgs. 2-3

Better Industrial Waste Recovery and Treatment

When inquiring check CP 2670 on handy form, pgs. 2-3

When inquiring check CP 2671 on handy form, pgs. 2-3

D

Defoamers	34
Degassing Aluminum Paints ..	22
Dehumidifiers	48, 163
Detectors, Radioactivity	180
Detergents	31, 181
Deuteroparaffin	52
Dialysers, Laboratory	89
Diatomaceous Materials	91
Disinfectants	181
Dispersing Agents	34
Dosimeters	179
Drawing Instruments	66
Driers, Paint	22
Drives, Sheave	155
Drives, Tension Controlling ..	17
Drum Upending Bars	102
Drums, Fiber	100
Polyethylene	102
Dryers, Rotary	120
Drying, Spray	153
Duplicating Machines	143
Dust Collectors .. 123, 132, 134,	
..... 151, 160, 185	

E

Ejectors, Steam-jet 57, 95, 109	
Electrical Systems, Plant 148, 149	
Electrodes, Spectrographic	180
Enamels, Uses of	142
Engineering, Plant	150
Engines	158
Enzymes	29, 32
Epichlorohydrin	19
Ethyl Vinyl Ether	36
Ethylene Oxide	5
Evaporators, Sanitary	130
Exhausters	15, 190

F

Fabrication, Wire	164
Fabrics, Industrial	28
Fans, Explosion-proof	6
..... Industrial	116
Fasteners, Corrosion-resistant ..	112
..... Stainless	106
Fatty Acid Derivatives	24, 25
Fatty Acids	24, 25, 184
Fatty Alcohols	33
Feeders, Gravimetric	75
Fibers, Acrylic	25
Filling Machines	96, 132
..... Powder	99
Filter Aids	48, 91, 187
Filter Fabrics	48
Filter Paper	126
Filter Presses	116, 189
Filters	110, 186, 192
..... Air Line	98
..... Disc	131
..... Molten Sulfur	52
..... Pilot Plant	146
..... Portable	132
..... Pressure	54
..... Pressure-leaf	145
..... Stainless Steel	169
Fire Blankets, Glass-cloth	124
Fire Extinguishers	119, 125
Fire Protection	118, 127
Fire Protection Sprinkler,	
..... Automatic	122
Firebrick	143
First Aid Burn Kits	126
First Aid Kits, Assembling of ..	180
Fittings, Flared-tube	194
..... Forged Steel	3rd cover
..... Porcelain	161

Pyrex	87
Speedline	124
Stainless	106, 114
Tube	138
Welding	3, opp. 15, 163
Flame Retardants	26
Flanges, Steel	165
Flocculating Agents	33
Floor Repairing Material 184, 194	
Flooring, Metal	118
Fuels	26
Fumigants	29
Furnace Equipment, Arc 92, 93	
Furnaces, Laboratory	85

G

Gages, Liquid	60
..... Tank	70
..... Vacuum	68
..... Welding Pad	62
Gas Pipeline Leakage	167
Gases, Rare	32
Gaskets, Metallic	94
..... Teflon	164
Gears	50
Generators, Inert Gas 15, 117	
..... Oxygen-nitrogen	141
..... Steam	30
..... Turbine	148, 149
Glassware, Plant Equipment ..	87
Gloves, Plastic-coated	127
Glycerine	27
Glycerol, Text on	95
Goggles, Safety	120
Graphite Products	180
Gratings	150

H

Heat Exchangers 9, 35, 52, 110,	
..... 115, 133, 188	
Heat Transfer Media	53
Heaters, Fired	135
..... Suction	126
..... Unit	10
Heating Elements	127
Hexokinase	32
Hoists	72
Hopper Cars	78
Hoppers, Loading	74
Hose, Rubber Air	176
Hose Coupling Equipment	140
Hydrocarbons, Detection of ..	46
Hydrogen, Determination of ..	45
12-Hydroxy Stearic Acid	25

I

Indicators, Color Difference	10
..... Force	70
..... Gas Flow	65
..... Pressure	55
..... Temperature	66
Infrared Heating and Drying ..	145
Inhibitors, Corrosion	106
..... Testing of	111
Ink Tester	39
Insecticides	29, 181
Insulating Unions	145
Insulation	52
..... Cork	183
Intercom Systems	88
Isoocyanates	20, 21

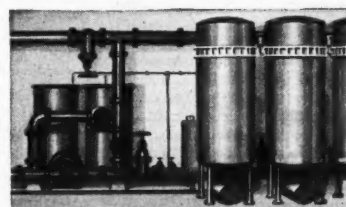
J

Joints, Expansion	113, 164
-------------------------	----------

Wherever you need "drinking-pure" water . . .



CELITE FILTRATION produces clear sparkling water ... even removes chlorine-resistant organisms



In municipal water works—engineers find that a Celite Diatomite Filtration System permits lower capital investment plus high operating efficiency. Filtration is extremely thorough, the filter cake can withstand many times the pressure of an ordinary filter bed. No pH control is necessary with Celite.



In swimming pools—operators find that Celite Filtration not only safeguards the purity of pool water, but it provides sparkling clear, inviting water—an important asset in attracting customers. With Celite Filtration, there is a continuous recycling of water at fast flow rates, and the need for chemical treatment is reduced.

Celite® Filtration removes even the finest suspended solids such as amoebae and algae—many of which cannot be filtered by other means. All these impurities are entrapped by Celite's almost infinite network of tiny porous particles . . . thus reducing the need for chemical treatment. Celite offers many other advantages, too . . . it permits important space savings in the installation, high flow rates are maintained, and far less backwash water is required for cleaning the system.

Carefully processed from the purest deposits of diatomaceous earth, Celite is available in nine standard grades. Each is designed to filter out suspended impurities of specific size and type. Utmost uniformity of

product is maintained, so that whenever you reorder, you are assured of the same accurately graded powder.

Municipal water works engineers, food processors, beverage manufacturers, swimming pool operators . . . all who require "drinking-pure" water, can benefit from filtration with Celite Filter Aids. It will pay you to investigate the many advantages of Celite for your particular requirement! To have a Celite Filtration Engineer study your problem and offer recommendations, simply write Johns-Manville, Box 60, New York 16, New York. In Canada, 199 Bay Street, Toronto 1, Ontario. No obligation or cost.

•T.M. Reg. U. S. Pat. Off.



Johns-Manville CELITE FILTER AIDS

When inquiring check CP 2673 on handy form, pages 2-3

and ANOTHER FINE HEAT EXCHANGER



One of two 44" x 18" fixed tube sheet Heat Exchangers; Stainless Steel Type 316 Shell and Tubes; Carbon Steel Heads.

ON ITS WAY TOWARD CUSTOMER SATISFACTION

... Yes, DOWNTOWN solicits your inquiry for Heat Transfer Equipment fabricated of Aluminum, Inconel, Nickel, Phosphor and Aluminum Bronze, Copper, Stainless, Monel, Silicon Bronze and various grades of Carbon Steel. Design and construction will meet requirements of A.S.M.E. Code or other agency specified by customer. Equipment of our design is sold on a guaranteed performance basis or we will fabricate to customer's drawings. Modern facilities available for radiographing, stress relieving and heat treating, where required. Remember: "Your Needs are Our Specialty!" DOWNTOWN is experienced in building equipment with Bi-metallic, Finned Tube and Karbate Graphite.

Write on your letterhead for DOWNTOWN literature on shell and tube heat exchangers.



DOWNTOWN IRON WORKS, INC.
DOWNTOWN-PENNA.

DIVISION OF
PRESSED STEEL
TANK COMPANY



STEEL AND ALLOY PLATE FABRICATION AND HEAT EXCHANGERS

When inquiring check CP 2674 on handy form, pgs. 2-3



Rugged, effective vibration without damage to your bins and hoppers when you use the patented Peterson pneumatic VIBROLATOR.

Effective all-directional vibration for moving stubborn materials in hoppers and bins. Instantly self-starting, no lubrication or maintenance needed. A variety of sizes available to meet all applications. Whatever your vibrator requirements, there's a Peterson Vibrolator to fit the job and do it more efficiently.



When inquiring check CP 2675 on handy form, pgs. 2-3

Revolving 182
Rotary Pressure 176
Universal 126

Recirculating 192

P

K
Kettles, Corrosion-resistant 111

L

Labeling, Hand 98
Labeling Guide, Chemical 125
Laboratory Apparatus 169
Laboratory Furniture 90
Laboratory Mills 93
Ladders, Safety 150
Lamps, Explosion Proof 121
Licorice 22
Lighting, Corridor 156
Lighting Fixtures, Explosion-proof 126
Liners, Bag and Drum 97, 98
Polyethylene 103
Linings, Brick 9
Lead 105
Rubber 114
Liver Catalase 29
Loaders, Box Car 184
Lubricants 26
Lubricators, Plug Valve 139

M

Maintenance, Small Plant 182
Masks, Gas 118
Materials Handling Engineering 74
Materials Handling Equipment 175
Mats, Rubber 121
Metallizing, Silver 104
Metals, Non-ferrous 194
Meters, Coal Flow 82
Color 58
Composite 164
Flow 61
Liquid 66, 90
Positive Displacement 15
Variable Area 65
Methionine, Tagged 39
Methyl Vinyl Ether 36
Microchemical Laboratory 84
Microscopes 88
Mills, Laboratory 93
Roller 41
Mineral Jigs 184
Mixers 192
Banbury 173
Dispersing 128
Moisture Analyzers 180
Molding Techniques, Teflon 161
Mothproofing Compounds 37
Motors, Explosion-proof 16-17
Self-braking 136

N

Naphthalene Derivatives 37
Nozzles, Nylon 109
Nozzles, Spray 144
Nuclides, Chart on 54

O

Oils, Glass Mold Spray 159
Industrial 24-25, 45
Ovens, Radiant Heat 16

Packaging, History of 103
Packings 142
Paint Brush Holder 152
Paint Strippers 162
Paints 108, 178
Paradichlorobenzene 38
Parathion 20, 21
Pentaerythritol 36
Perforating Services 120
Petrochemicals 43
Petroleum Gases, Storing of 43
Photometers, X-ray 92
Pigments, Aluminum 44
Pipe Fittings 9
Pipe Joint Cleaner 142
Pipe Stand 144
Pipe Straighteners 148
Pipe, Corrosion-resistant 107
Plastic 113, 139
Pyrex 87
Pipe, Rubber-lined Steel 188
Stainless 112
Plasticizer Applications Lab 40
Plasticizers 36
Plastics 26, 112, 162
Industrial 174
Surplus 52
Polyvinyl Chloride Resins 28
Porcelain, C-R 161
Porous Media 128, 183
Potash, Caustic 38
Potassium Carbonate 38
Potentiometers, Electronic 59
Linear Motion 60
Power from Atomic Energy 56
Power Supplies 87
Preservatives 37
Preservatives for Adhesives 32
Presses, Continuous 190
Processing Equipment 83, 153
Corrosion-resistant 105
Propellers 135
Protractors 66
Pulverizers 160
Pulverizers, Jet 132
Pump Plungers, Ceramic 106
Pumping Units 16-17
Pumps 15
Acid-handling 155
Boiler Feed 147
Bronze 80
Centrifugal 9, 42, 108, 142, 148, 152
Chemical 135
Diaphragm Slurry 154
Drum 177
Filter 134
Hand Transfer 88
Liquid 90
Oil Diffusion 138
Polyethylene 176
Proportioning 2nd cover, 71
Raw Material 193
Rotary 144
Rotary Gas Ballast 179
Rotary Gear 151
Sanitary 127
Solid & Acid 116
Sump 182
Vacuum 121, 156, 169
Vertical Turbine 56
Putty, Plastic 106

R

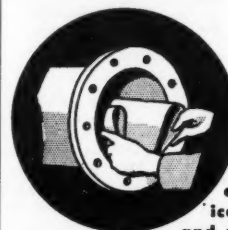
Racks, Storage 82
Recorders 171
Mass Flow 62
Rectifiers, Mechanical 46-47
Pumpless 12
Refractories, Insulating 49

**Saran
rubber
CAN'T
rust...
CAN'T
corrode**

that's why

leading engineers choose
**MPC SARAN RUBBER* LINED
STEEL PIPE**

wherever corrosion is a problem!



You can be sure you're getting the highest degree of resistance to corrosive chemicals, oils, acids and solvents when

MPC SARAN RUBBER-LINED STEEL

PIPE is specified. Available in either fabricated light gauge steel or standard steel pipe in 10' and 20' standard lengths, ranging in size from 8" up ... or fabricated to your exact requirements. Fittings in standard and special designs for all diameters.

For additional information write today to your nearest MPC representative or to our application engineering department.

You can lick corrosion. It's as easy as MPC!

*a development of
The Dow Chemical
Company



MICHIGAN PIPE COMPANY

Bay City • Michigan

Manufacturers of Wood-Lined Steel, Saran Rubber-Lined Steel, Stainless Steel and Monel Piping. Represented nationally by Saran Lined Pipe Co., Detroit, (Ferndale) Michigan.

When inquiring check CP 2676 on handy form, pgs. 2-3

CHEMICAL PROCESSING

STUCK BIN LATELY?



"We're turning this plant upside down in an effort to figure out how to keep our chemicals moving through bins and hoppers. What can we do?"



Literature on request.



2706 Clinton Ave. • Cleveland 13, Ohio

When inquiring check CP 2677 on handy form, pgs. 2-3

Regenerators, Heat	164
Regulators, Temperature	60, 66
Relays	178
Power	179
Research, Industrial	52
Organization	52
Resin Material	36
Resin Plants	133
Resins, Acrylic	23
Paint	33, 39
PVC	28
Resistors, Temperature	68
Respirators	121
Rotameters, Purge	71
Rotators, Portable	134
Rubber Accelerators	35
Rubber Chemicals	20
Rubber Linings	113
Rubber Process Aids	18
Rubber-protected Products	107
Rubbers, Synthetic	165

S

Safety Equipment	121, 171
Samplers, Air	60
Scales	96, 99
Scintillation Unit	54
Screens, Metallic	164
Vibrating	103
Seals, Mechanical	177
Sensory Testing Panels	183
Separators	170
Centrifugal	144
Continuous	132
Magnetic	102, 130, 146
Signals, Sound	166
Silica Gel	22
Silos, Concrete	123
Skids	82
Soaps	181
Sodium Pentachlorophenate	32
Solvent Extraction of Cottonseed	56
Solvent Extraction Processes	131
Solvents	32
Spectrographs, Grating	183
Spectrometers	69
Mass	65
Speed Changers	70
Speed Reducers	181
Sprinklers, Shut-off for	120
Sprinklers, Spray	125
Sprockets	13
Standards, Weights	179
Staplers, Carton	100
Starters, Magnetic	16-17
Steam Traps	70, 142
Steels, Alloy	21
Preparation for Painting	114
Steroid Synthesis	91
Stethoscope	64
Strainers	86, 160, 180
Stuffing Boxes	190
Substations	148-149
Sugar, Bulk Storage of	8
Sulfates, Fatty Alcohol	33
Switchgear Units	148-149

T

Tall Oil	27
Tanks, Corrosion-resistant	111
Storage	134
Storage & Mixing	192
Technical Reports, Bibliography of	28
Teflon	28
Testers, Electrical Insulation	62
Flash Point	90
Tensile Strength	171
Tetrachloro Phthalic Anhydride	38
Thermocouples, Contact	70
Thermometers, All-metal	61
Dial	70
Mercury	64

Titration	91
Automatic	60, 180
Tools, Packing	102
Towers	9
Cooling	90, 124
Refinery	7
Tractor Shovels	77, 81
Trailers, Industrial	184
Transformers, Shell-form	92-93
Transmitters, Differential Pressure	179
Mass Flow Rate	62
Pressure	179
Trichlorethylene	38
Trifluorochloroethylene	162
Trucks, Bundle	76
Floor	80
Fork	76, 80
Lift	73, 79, 82, 83
Pallet	75
Spring-bearing	152
Tube, Condenser	181
Flexible	147, 156
Flow	64
Heat Exchanger	181
Seamless	11, 183
Stainless	112
Steam	55

U

Unions, Rotary	150
Utensils, Stainless	30

V

V-belts	166
Vacuum Equipment	176
Valves	9, 140
Butterfly	180
Check	156, 176
Control	64, 67
Diaphragm	152, 159
Drain	182
Gate	123, 191
Plug	155
Relief	14, 176
Rubber Pinch	182
Standard	108
Toggle	158
Vanadium Oxidation	115
Vents, Relief	186
Vessels, Multi-layer	7
Vibrating Equipment	131
Vibration Controls	178
Vibrators	189
Pneumatic	177, 188
Viscometer Cleaning Apparatus	86
Viscometers, Recording	71
Vitamins, Synthetic	57

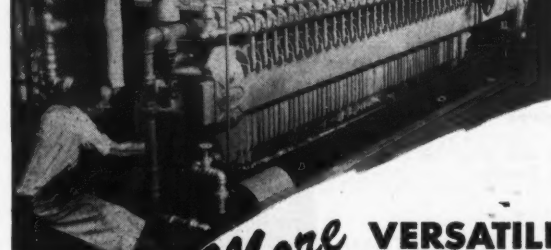
W

Water Repellents	39
Water Softening	182
Waxes	24, 25, 181
Weighing Equipment	42
Weighing Unit, Hydraulic	155
Welder, Hand-portable	156
Welding	167
Welding Compounds, Anti-spatter	152
Welding Equipment, AC	176
Welding Head Shields	124
Wetting Agents	20, 21
Whiteners, Textile	38

X

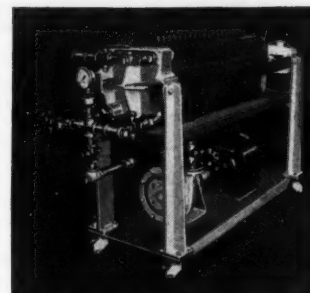
X-ray Inspection	13
------------------------	----

**MORE THAN A HALF CENTURY
OF "KNOW-HOW" IN DESIGN AND
MANUFACTURE OF FILTRATION EQUIPMENT**



One of many filter presses for clarifying and for recovery, washing and partial drying of filter cake in fine chemical manufacture.

**More VERSATILE • EFFICIENT
WIDELY APPLICABLE**



Shriver stainless steel, washing type filter press, complete with feed pump, on portable stand.

The performance history of thousands upon thousands in service today and the unabated demand for more to meet the needs of expanding process industries prove Shriver Filter Presses—

- Economical in first cost and in operation.
- Applicable for almost any filterable material.
- Capable of recovering solids, clarifying, washing, extracting, thickening, melting, redissolving—any or all in one equipment.
- Operate at any pressure or temperature, in any capacity.

Learn why and how. Send this coupon.



Send Shriver Catalog No. 52 ☐

Name.....Title.....

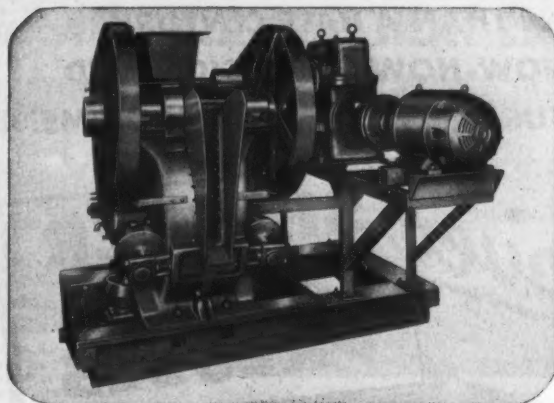
Company.....

Address.....

City.....Zone.....State.....

T. SHRIVER & CO., Inc. 846 Hamilton St. • Harrison, N. J.
Filter Presses • Filter Media • Diaphragm Pumps

When inquiring check CP 2678 on handy form, pgs. 2-3



"DAVENPORT" CONTINUOUS PRESS

Mechanically extracts excess moisture from a wide range of semi-solids. Illustrated is a "DAVENPORT" Press equipped with a direct motor drive and fluid coupling—recommended as a safety feature on extremely hard pressing materials. Presses can also be furnished with a variable speed drive unit.

Write for our illustrated catalog showing available sizes.

For quick reference see your 1953 or '54 Chemical Engineering Catalog.

DAVENPORT MACHINE AND
Foundry Company
DAVENPORT IOWA

When inquiring check CP 2679 on handy form, pgs. 2-3

DAVENPORT

De-Watering
Presses and
Screens
ROTARY
Steam Tube, Hot
Air and Direct Fire
Dryers
Water Tube and
Air Coolers

You can be sure **GALLAHER CERTIFIED**
RATINGS mean *Peak Performance*

HERE'S WHY

Gallaher ratings are the result of actual physical tests of the entire unit—not a fan wheel alone or other component, but interpolations of free air data, but a true picture of the unit as it operates under actual conditions.

Any other method of rating a power roof exhauster will be inaccurate. Gallaher research has shown conclusively that the errors may run as high as 50% when ratings are mere theoretical calculations.

Gallaher units with patented, built-in scroll effect are the only power roof exhausters which can develop high static pressures. With this feature, thousands of industrial applications are well within the range of economical power roof exhausters. They have been rated in an independent laboratory under the direction of a nationally recognized authority under the conditions prescribed by NAFM and ASH&VE.

Before you buy power roof exhausters we think you'll agree that these three questions should be answered to your satisfaction. 1. How were the tests conducted? 2. Did it include the whole unit and not a component? 3. What impartial authority conducted the tests? We think that you'll buy Gallaher Air-Vans.

For full information write Dept C-6

The GALLAHER Company
1110 SOUTH STREET CHAMPAIGN, ILLINOIS

When inquiring check CP 2680 on handy form, pgs. 2-3

Advertisers in this issue

A		C	
Abbe Engineering Co.	128	Bacharach Industrial Instrument Company	88
Agency-Spooner & Kriegel		Agency-W. S. Hill Company	76
Acme Industries, Inc.	89	Baker-Raulang Company, The	76
Agency-The Jaqua Company		Agency-G. M. Basford Company	
Acme Protection Equipment	118	Ballymore Co.	150
Agency-Fred H. Ebersold, Inc.		Agency-John P. Eldridge	
Adams Co., Inc., R. P.	52	Barco Manufacturing Co.	182
Agency-Melvin F. Hall Advertising Agency		Agency-Armstrong Advertising Agency	
Airetool Manufacturing Company	138	Barry & Co., Incorporated, B. J.	28
Agency-Harry M. Miller, Inc.		Agency-Jackson and Company	
Air-Products, Incorporated	141	Beach-Russ Company	121
Agency-Thoma and Gill		Agency-Spooner & Kriegel	
Air Reduction Magnolia Co., A Division of Air Reduction Company, Incorporated	32	Beckman Instruments, Inc.	60
Agency-G. M. Basford Co.		Agency-Dozier-Eastman and Company	
Ajax Flexible Coupling Co., Inc.	78	Bemis Bro. Bag Company	103
Agency-Horace A. Laney		Agency-Gardner Advertising Co.	
Allis-Chalmers Mfg. Co.	16, 17, 41	Benjamin Electric Mfg. Co.	121
Agency-Compton Advertising Inc.		Agency-Van Auken, Ragland & Stevens	
Allis-Chalmers Mfg. Co., Tractor Division	77	Bersworth Chemical Co.	28
Agency-Bert S. Gittini		Agency-Meissner & Culver, Inc.	
Allmetal Screw Products Company, Inc.	106	Biddle Co., James G.	62
Agency-Fred Lange Associates, Inc.		Agency-The Roland G. E. Ullman Orgn	
Alsop Engineering Corporation	192	Black Products Company	98
Aluminum Company of America, Paint Service Bureau	44	Agency-Lawson & Salomon	
Agency-Fuller & Smith & Ross, Inc.		Blaw-Knox Company, Automatic Sprinkler Department	122
American Agile Corporation	178	Agency-Al Paul Lejion Company, Inc.	
Agency-Herb W. Buerger		Blaw-Knox Company, Builovak Equipment Division	130
American Air Filter Company, Inc.	185	Bowser, Inc.	90
Agency-Doe-Anderson Advertising Agency		Agency-Willis S. Martin Company	
American Chemical Paint Company	104	Bridgeport Brass Company	181
Agency-May Advertising Company		Agency-Hazard Advertising Company	
American District Steam Company, Inc.	113	Bristol Company, The	59
Agency-Warman, Robins & Gorham, Inc.		Agency-James Thomas Chirurg Company	
American Hard Rubber Company	107	Brown Company	33
Agency-W. L. Towne Advertising		Agency-J. M. Matthes, Incorporated	
American Tool & Machine Company	136	Buell Engineering Co.	151
Agency-James Thomas Chirurg Company		Agency-Hicks & Greist, Inc.	
Ames Iron Works	30	B/W Controller Corporation	61
Agency-Melvin F. Hall Advertising Agency		Agency-Rolle C. Spinning, Inc.	
Annin Company, The	67	C	
Agency-The McCarthy Company		C-O-Two Fire Equipment Company	125
Ansul Chemical Company, Fire Equipment Division	119	Agency-G. M. Basford Company	
Agency-J. A. Cormack		Cambridge Wire Cloth Co., The	164
Armour and Company, Armour Chemical Division	24, 25	Agency-Emery Advertising Corporation	
Agency-Foote, Cone & Belding		Carbide and Carbon Chemicals Company, A Division of Union Carbide and Carbon Corporation	184
Aurora Pump Company, Subsidiary of New York Air Brake Corporation	142	Agency-J. M. Matthes, Inc.	
Agency-Fred A. Hinrichsen Adv. Agency		Carboline Company	106
"Automatic" Sprinkler Corporation of America	127	Agency-Spooner & Kriegel	
Agency-The Robert A. Joyce Company		Carboloy Department of General Electric Company	51
Automotive Rubber Co., Inc.	114	Agency-Brooke, Smith, French & Dorrance Inc.	
Agency-Zelzy and Associates		Carborundum Co., The, Refractories Div.	128
B		Agency-G. M. Basford Company	
Babcock & Wilcox Co., The, Refractories Division	143	Cash Company, A. W.	108
Agency-Michel-Cather, Inc.		Cecilcote Company, The	112
Babcock & Wilcox Company, The, Tubular Products Division	11	Agency-The Carpenter Advertising Co.	
Agency-O. S. Tyson and Company, Inc.		Chase Bag Company	97
		Agency-The Buchen Company	
		Chelsea Fan & Blower Co., Inc.	6
		Agency-George Homer Martin Associates	
		Chicago Bridge & Iron Company	134
		Agency-Russell T. Gray, Inc.	
		Clark Equipment Company, Industrial Truck Division	80
		Agency-Marteller, Gebhardt and Reed, Inc.	

PUMP STUFFING BOXES

INFORMATION
suggesting solution
of common stuffing
box difficulties;
available in newly
revised
BULLETIN S-147

Fig.
19,488

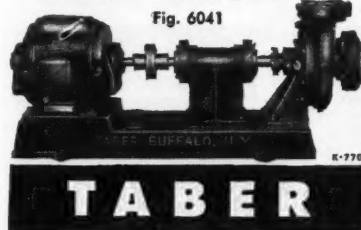


Number of rings, depth
of box, type of pack-
ing... chemical and
physical properties
of the fluid being
pumped, speed of
shaft and other
pertinent usa-
ble facts are
in this Bulletin.

WRITE on business stationery for your
copy of Bulletin S-147.

TABER PUMP CO. (Est. 1859)
294 ELM ST. • BUFFALO 3, N. Y.

Fig. 6041



When inquiring check CP 2681
on handy form, pgs. 2-3

CHEMICAL PROCESSING

Cleaver-Brooks Company	167
Agency-Klaw-Van Pietersom-Dunlap, Inc.	
Cleveland Vibrator Company, The	189
Agency-R. C. Wellman Associates, Inc.	
Coe Manufacturing Co., The	70
Agency-T. H. Hall and Son	
Cone-Drive Gears Division, Michigan Tool Company	50
Agency-Denham & Company	
Consolidated Engineering Corporation	65
Agency-Hixon & Jorgensen, Inc.	
Continental Can Company, Fibre Drum Division	100
Agency-Batten, Barton, Durstine & Osborn, Incorporated	
Coppus Engineering Corporation	116
Agency-James Thomas Chiving Company	
Corning Glass Works	87
Agency-Charles L. Ramrill & Co., Inc.	
Crane Co.	191
Agency-The Buchen Company	
Crane Packing Company ..	142, 177
Agency-Symonds, MacKenzie & Company, Inc.	
Crawford Fitting Co.	138
The W. N. Gates Co.	

D

Davenport Machine and Foundry Company	190
Agency-Bawden Bros., Inc.	
Delta Engineering Sales Co.	139
Agency-Bryan & Bryan	
DeZurik Shower Co.	155
Agency-The Stockinger Company	
Dicalite Division, Great Lakes Carbon Corporation	91
Agency-Darwin H. Clark Co.	
Dow Chemical Company, The	37
Agency-MacManus, John & Adams, Inc.	
Dow Corning Corporation	34
Agency-Dow Wagnitz	
Downingtown Iron Works, Inc. Division of Pressed Steel Tank Company	188
Agency-R. E. Lovekin Corporation	
Dresser Industries, Inc. (see Roots-Connorsville Blower Corporation)	15
Agency-Fuller & Smith & Ross, Inc.	
Du Pont de Nemours & Co., (Inc.), E. I., Electrochemicals Dept.	39
Agency-Batten, Barton, Durstine & Osborn, Incorporated	
Du Pont de Nemours & Co., (Inc.), E. I., Polychemicals Department	23, 28
Agency-Batten, Barton, Durstine & Osborn, Incorporated	
Durametallic Corporation	102
Agency-M. Dale Ogden Advertising	

E

Eco Engineering Company	135
Agency-The Michener Company	
Edward Valves, Inc., Subsidiary of Rockwell Manufacturing Company	123
Agency-Marsteller, Gebhardt and Reed, Inc.	
Eimco Corporation, The	54
Agency-Mattie Company	
Eitel-McCullough, Inc.	156
Agency-Conner-Jackson-Walker-McClure	
El Dorado Oil Works	184
Agency-Sidney Garfield & Associates	
Electric Auto-Lite Company, The, Instrument and Gauge Division	66
Agency-J. C. Bull, Incorporated	

Elliott Company, Industrial Process Division	95
Agency-Peterson & Kempner, Inc.	
Ertel Engineering Corporation	132
Agency-W. N. Hudson	
Exact Weight Scale Company, The	96
Agency-J. W. Sieverling	

F

Fairbanks, Morse & Co.	173
Agency-The Buchen Company	
Farris Engineering Corporation	14
Agency-Lewis Advertising	
Federated Metals Division, American Smelting and Refining Company	194
Agency-John Maiber Lupton Company, Inc.	
Filtration Engineers, Inc.	146
Agency-W. L. Towne Advertising	
Filtration Fabrics Division, Filtration Engineers, Inc.	48
Agency-W. L. Towne Advertising	
Fischbein Company, Dave	98
Agency-Fischbein Advertising	
Flexible Tubing Corporation ..	156
Agency-G. M. Basford Company	
Flexrock Company	194
Agency-Walter S. Chittick Company	
Fluor Corporation, Ltd., The	43
Agency-Dozier-Eastman and Company	
Foster Engineering Company ..	64
Agency-Sanger-Funnell, Incorporated	
Foxboro Company, The	69
Agency-Horton-Noyes Company	
Frantz Co., Inc., S. G.	102
Agency-Eldridge, Inc.	
Friez Instrument Division of Bendix Aviation Corporation	68
Agency-MacManus, John & Adams, Inc.	
Fuller Brush Co., The, Industrial Div.	162
Agency-John B. Fairbairn	
Fuller Company	193
Agency-O. S. Tyson and Company, Inc.	

G

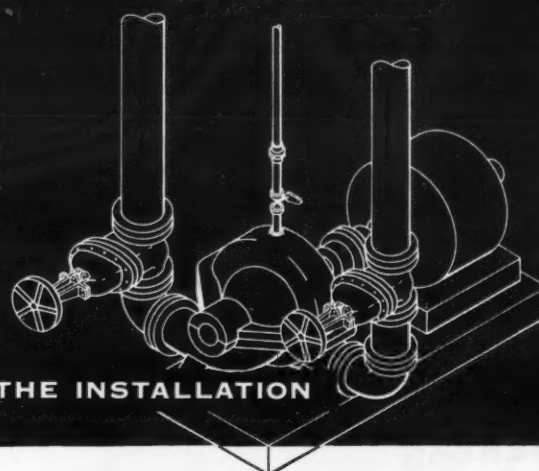
Galigher Co., The	116
Agency-Adamson, Buchman & Associates	
Gallaher Company, The	190
Agency-Holland, Holland & Goodsell	
Gates Rubber Company, The	166
Agency-Cloyd F. Woolley, Inc.	
Gaylord Container Corporation	99
Agency-Oakleigh R. French & Associates	
General Electric Co.	12, 148, 149
Agency-G. M. Basford Company	
Gifford-Wood Co.	74
Agency-O. S. Tyson and Company, Inc.	
Globe Company, The, Grip-Strut Division	118
Agency-Ross Llewellyn Inc.	
Glycerine Producers' Association	27
Agency-G. M. Basford Company	
Gray Company, Inc.	177
Agency-The Alfred Colle Company	
Grinnell Company, Inc.	159
Agency-Horton-Noyes Company	

H

Harbison-Walker Refractories Company	49
Agency-Walker & Downing	

Will Your Valves Last 50 Years?

...on this
Tough Pump Service,
for instance



At The Great Western Sugar Company, Longmont, Colorado, plant, with Crane Iron Body Wedge Gate Valves on suction and discharge lines of juice pumps.

THE CASE HISTORY

Originally the Crane valves were installed on belt-driven pumps when the plant was built in 1903. In 1952, the old pumps were replaced. Nearly all the Crane valves were found in good condition and put right back in service on the new pumps.

It's no easy job these Crane 6 and 8-inch, 125-pound brass-trimmed gate valves have been doing since 1903. The plant operates on 80-day continuous beet sugar campaigns. In spite of intermittent operation, and with periodic routine maintenance only, the Crane valves never fail to operate freely, smoothly, and seat tightly. For 50 years they have assured dependable, positive flow control in event of pump failure—and they're still doing it.

THE BETTER QUALITY...BIGGER VALUE LINE...IN BRASS, STEEL, IRON

CRANE VALVES

CRANE CO., General Offices: 836 S. Michigan Ave., Chicago 5, Illinois

Branches and Wholesalers Serving All Industrial Areas

VALVES • FITTINGS • PIPE • PLUMBING • HEATING

When inquiring check CP 2682 on handy form, pgs. 2-3

VALVE SERVICE RATINGS

SUITABILITY:

Doing the job for 50 years

MAINTENANCE COST:

Routine care only

SERVICE LIFE:

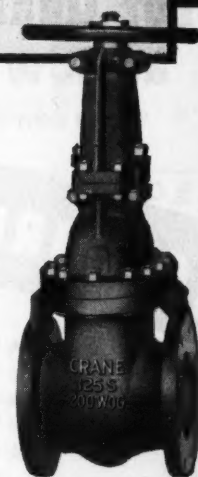
Installed 1903—Now on new pumps

OPERATING RESULTS:

No shutdowns for valve trouble

AVAILABILITY:

Catalog item—Current No. 465½



THE VALVE

Here is today's model of these "50-year service record" Crane 125-pound iron wedge gates. Still made to the most rigid quality standards, these modern valves keep building unusual performance records in every industry. They come in patterns for every need. See your Crane Catalog or your Crane Representative.



for the
**THRIFTY
BUYER**

When Your Process Demands **FILTERING** **MIXING** **STORING**



LOOK FOR THESE FEATURES

PROVED, LOW-COST OPERATION
EASY TO CLEAN
DEPENDABLE, TROUBLE-FREE
PERFORMANCE
ALL SIZES AND CAPACITIES
LOW UPKEEP

Regardless of the size or type of your installation, whatever your process may be, there's an Alsop Filter, Mixer and Storage and Mixing Tank to "fit your job", you can be sure of getting from Alsop the right unit properly applied — you can depend on Alsop proved performance features. Alsop Filters, Mixers and Tanks are available in a complete range of sizes and capacities and Alsop Equipment is custom fitted to your application by engineers who have thorough experience in Filtration and Agitation. Look for the proved features and the benefits that Alsop Filters, Mixers and Tanks can bring to your processing operations. Write for full information, recommendations and quotations.

ALSOP
ENGINEERING CORPORATION

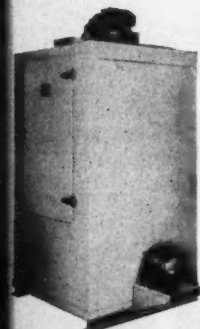
807 Alsop Square, Milldale, Connecticut

When inquiring check CP 2683 on handy form, pgs. 2-3

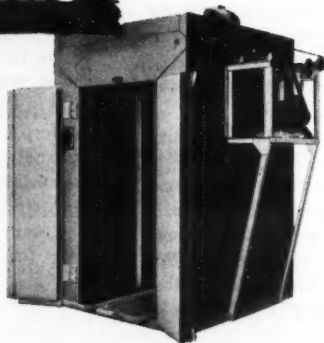
For Quality Drying or Baking at Low Operating Cost....

you can count on

GEHNRIK OVENS



- ★ Standard recirculating type.
- ★ Electric, gas, oil or steam heated.
- ★ Bench, cabinet and truck loading models.
- ★ Efficient, uniform controlled baking or drying of chemicals and process materials.
- ★ Broad range of sizes.
- ★ Prompt shipments.
- ★ Write for Catalog.



Also all types of batch and continuous conveyor dryers and ovens to your requirements.

W. S. ROCKWELL COMPANY

220 ELIOT STREET • FAIRFIELD, CONN.

When inquiring check CP 2684 on handy form, pgs. 2-3

Hardinge Company, Incorporated	68	Kemp Mfg. Co., The C. M., Inc.	117
Agency-The W. H. Long Co.		Agency-Variant, Dugdale & Company, Inc.	
Harper Company, The H. M.	112	King Engineering Corp.	60
Agency-The Buchen Company		Agency-Carl Connable Advertising	
Harrington & King Perforating Co., The	120	Kinney Manufacturing Co., Inc.	169
Agency-Merchandising Advertisers, Inc.		Agency-Hammond-Goff Co.	
Harrisburg Steel Corporation	98	Korlund Company, Inc., The	178
Agency-The W. H. Long Co.		Agency-Sanger-Funnell, Incorporated	
Hastings Instrument Company, Inc.	68		
Agency-Geare-Marston			
Hauck Manufacturing Co.	126		
Agency-Spooner & Kriegel			
Haveg Corporation, Heat Exchanger Division	115		
Agency-Geare-Marston			
Hays Corporation, The	61		
Agency-Proebsting, Taylor, Inc.			
Hellige, Inc.	58		
Agency-Howard Advertising Associates, Inc.			
Heyden Chemical Corporation	36		
Agency-Sommers-Davis, Inc.			
Heyl & Patterson, Inc., 4th Cover			
Agency-Dan-A. Sullivan			
Hills-McCanna Co.	152		
Agency-Russell T. Gray, Inc.			
Hoke Incorporated	158		
Agency-Lewis Advertising			
Hooker Electrochemical Company	26		
Agency-Charles L. Rumrill & Co., Inc.			
Hough Co., The Frank G.	81		
Agency-Ervin R. Abramson			
Hudson Pulp & Paper Corp.	101		
Agency-Robertson, Buckley & Gotsch, Inc.			
Hyster Company	79		
Agency-Foote, Cone & Belding			

Ingersoll-Rand	152
Agency-Richard and Company, Inc.	
Insul-Mastic Corporation of America	137
Agency-Dan A. Sullivan	
International Nickel Company, Inc., The	129
Agency-Marschall & Pratt Co., Inc.	
I-T-E Circuit Breaker Co., Rectifier Division	46, 47
Agency-The Richard A. Foley Advertising Agency, Incorporated	

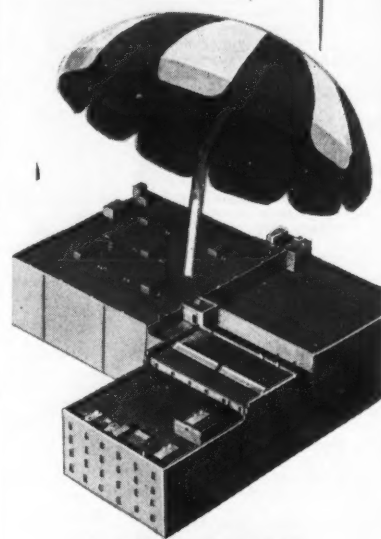
James-Pond-Clark	156
Agency-Anderson-McConnell Adv.	
Jefferson Chemical Company, Inc.	5
Agency-Hazard Advertising Company	
Jeffrey Manufacturing Co., The	131
Agency-Byer & Bowman Advertising Agency	
Jerguson Gage & Valve Company	62
Agency-Roy Elliott Company	
Johns-Manville	94, 187
Agency-J. Walter Thompson Company	
Johnston & Jennings Co., The, Division of Pettibone Mulliken Corp.	186
Agency-Henry T. Bourne Advertising Agency	

Kellogg Company, The M. W., Fabricated Products Division	35
Agency-Gordon Baird Associates, Inc.	

Laboratory Furniture Company, Inc.	90
Agency-Dundes & Frank Incorporated	
Lapp Insulator Co., Inc., Process Equipment Division	161
Agency-Ed Wolff and Associates	
Lee Metal Products Co., Inc.	111
Agency-Walker & Downing	
Leslie Co.	86
Agency-Merceready, Handy & Van Denburgh	
Librascope Incorporated	84
Agency-Western Advertising Agency, Inc.	
Lindberg Engineering Company, Lindberg Laboratory Equipment Division	85
Agency-Saunders, Shroat & Associates, Inc.	
Link-Belt Company	13, 83, 103
Agency-Klan-Van Piersom-Danlap, Inc.	
Liquidometer Corp., The	70
Agency-Lucerna Company Inc.	
Lovejoy Flexible Coupling Co.	126
Agency-Symonds, MacKenzie & Company, Inc.	
Lunkenheimer Company, The	63
Agency-Norman Malone Associates, Inc.	

Mac Andrews & Forbes Company	22
Agency-Gray & Rogers	
Majac Engineering Company	132
Agency-Lee English and Associates	
Marathon Corporation, Chemical Division	34
Agency-J. A. Cormack	
Marietta Concrete Corp., The	123
Agency-Harry M. Miller, Inc.	
Marley Company, The	90
Agency-Valentine-Radford	
Martin Engineering Company	188
Agency-Kenneth B. Butler & Associates	
Mehl Manufacturing Co.	98
Agency-The S. C. Baer Company	
Melooz, Inc.	102
Merco Centrifugal Co., Affiliate of the Merrill Company	132
Agency-Walther-Boland Associates	
Metalsmiths Division of Orange Roller Bearing Co., Inc.	30
Agency-Thoma & Gill	
Michigan Pipe Company	188
Agency-Foehl & Beck	
Michigan Wheel Co.	135
Agency-Stevens, Inc.	
Midland Industrial Finishes Company	109
Agency-Western Advertising	
Mine & Smelter Supply Co., The	182
Agency-Shaw-Schump Advertising Agency, Inc.	
Monsanto Chemical Company	20, 21
Agency-Gardner Advertising Co.	
Morse Manufacturing Co., Inc.	134
Agency-Chapman-Nowak & Associates, Inc.	
Mortell Co., J. W.	120
Agency-Arthur C. Barnett	

paint
this
"metal
sunshade"
on your
roof!



AND REDUCE BELOW-ROOF HEAT 13° to 26° IMMEDIATELY

Brush or spray this non-staining, bright, seamless metallic "sun shade" on the roof and it instantly reflects up to 70% radiant heat away from the roof. Below-roof temperature drops as much as 26° at once. Factories, hotels, motels, showrooms use Tropical Roof Coolerant for summer comfort, economy. Users report up to 25% less load on air conditioning, freezer equipment!

Tropical Roof Coolerant lengthens roof life. Its larger aluminum flakes bond to roof, prevent drying, keep it flexible, free of cracks, leaks; add years to life!

FREE! Get these low-cost benefits right now! Send for "Roof Coolerant" book and complete information TODAY!

THE TROPICAL PAINT & OIL CO.
1128-1238 W. 70th., Cleveland 2, Ohio

Heavy-Duty Maintenance
Paints Since 1883

TROPICAL

Subsidiary
of Parker
Rust Proof Company

When inquiring check CP 2685
on handy form, pgs. 2-3

CHEMICAL PROCESSING

Moto-Truc Co., The 73
 Agency-Ritchie & Sattler, Inc.
 Murray Manufacturing Co., D.
 J. 10
 Agency-R. C. Breth Inc.

N

National Airoil Burner Co.,
 Inc. 124
 Agency-R. E. Lovekin Cor-
 poration
 National Carbon Company, A
 Division of Union Carbide
 and Carbon Corporation 9
 Agency-William Esty Company,
 Incorporated
 National Filter Media Corp.,
 The 126
 Agency-Sanger-Funnell,
 Incorporated
 National Research Corporation,
 Equipment Division 179
 Agency-Sutherland-Abbott
 Neff & Fry Co., The 154
 Agency-The Parker Advertis-
 ing Company
 Niagara Alkali Company 38
 Agency-Hazard Advertising
 Company
 Niagara Filter Division, Amer-
 ican Machine and Metals,
 Inc. 145
 Agency-Charles L. Rumrill &
 Co., Inc.
 Nicholson & Co., W. H. 142
 Agency-Wilbur A. Myers
 Norton Company 183
 Agency-James Thomas
 Chirug Company

O

Oberdorfer Foundries, Inc., In-
 dustrial Pump Div. 80
 Agency-Richards & Webb,
 Inc.
 Oliver United Filters Inc. 154, 155
 Agency-Sanger-Funnell Incor-
 porated
 Omega Machine Company 75
 Agency-Hammond-Goff Co.

P

Palmer Thermometers, Inc. 64
 Agency-The Bobnett Company
 Panalarm Products, Inc. 139
 Agency-Thomas R. Sundheim
 Patterson-Kelley Co., Inc., The 157
 Agency-O. S. Tyson and
 Company, Inc.
 Perfecting Service Company .. 150
 Agency-E. J. Presser and Co.
 Pfaudler Co., The 110
 Agency-Charles L. Rumrill &
 Co., Inc.
 Pittsburgh Coke & Chemical
 Co. 29
 Agency-Walker & Downing
 Pneumatic Scale Corp., Ltd. 99
 Agency-H. B. Humphrey,
 Alley & Richards, Inc.
 Plastic Packaging Co. 103
 Agency-Symonds, MacKenzie
 & Co., Inc.
 Potts Co., Horace T. 124
 Agency-Baumont, Heller &
 Sperling, Incorporated
 Powers Regulator Co., The .. 66
 Agency-Symonds, MacKenzie
 & Company, Inc.
 Pressed Steel Tank Company 171
 Agency-The Buchen Company
 Proctor & Schwartz, Inc. 153
 Agency-Robert S. Kampmann
 Jr.
 Proportioners, Inc. 2nd Cover
 Agency-Hammond-Goff Co.
 Pulverizing Machinery Com-
 pany 160
 Agency-Merceready, Handy &
 Van Denburgh

Putman Publishing Company
 154, 158, 162, 178, 180, 184

Q

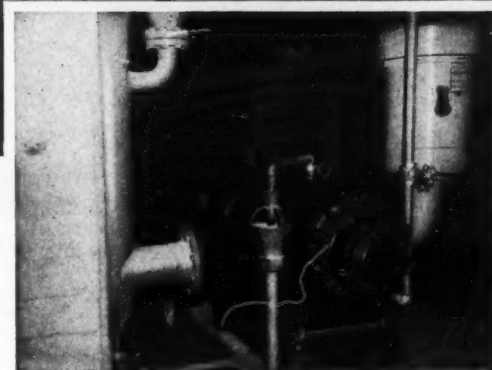
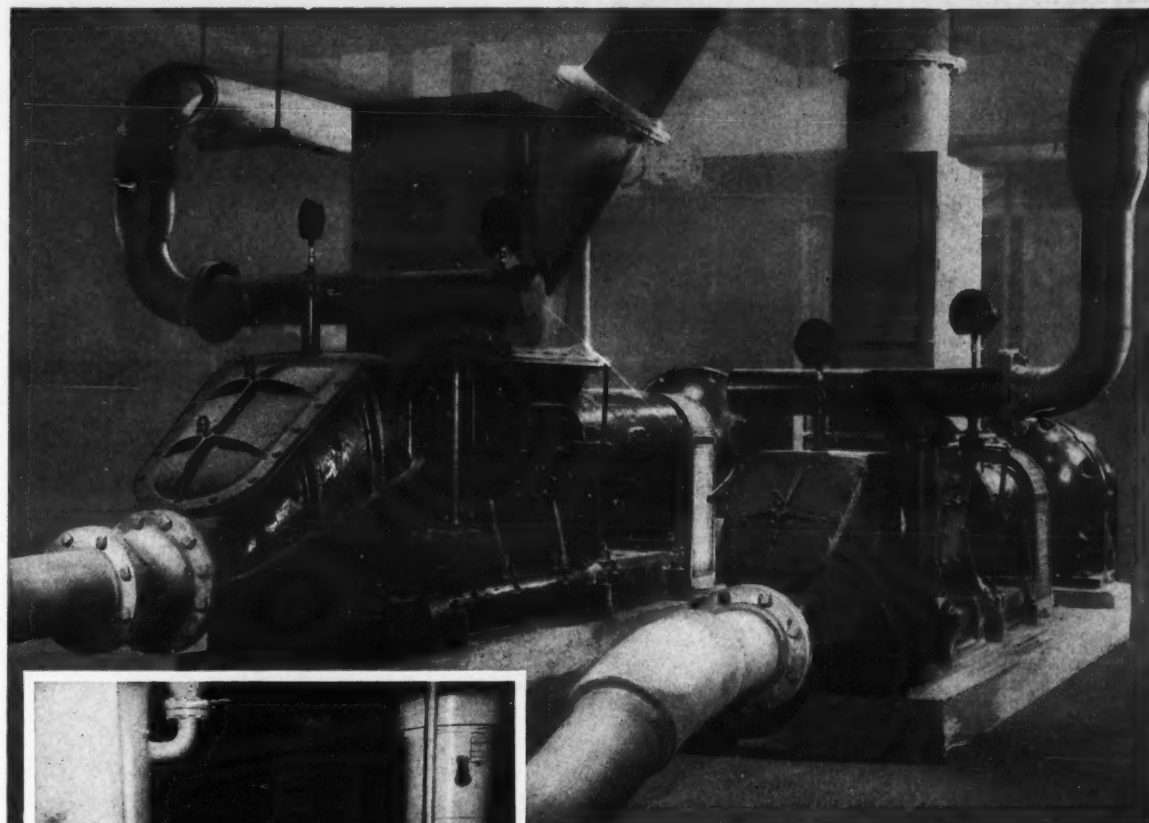
Quaker Oats Company, The,
 Chemicals Dept. 32
 Agency-Rogers & Smith

R

Republic Rubber Division, Lee
 Rubber & Tire Corporation 176
 Agency-Meek & Thomas, Inc.
 Republic Steel Corporation,
 Steel and Tubes Division 112, 168
 Agency-Meldrum & Fewsmith,
 Inc.
 Revere Copper and Brass In-
 corporated 147
 Agency-St. Georges & Keyes,
 Inc.
 Rochester Manufacturing Com-
 pany, Inc. 70
 Agency-Charles L. Rumrill &
 Co., Inc.
 Rockwell Manufacturing Com-
 pany 66
 Agency-Marsteller, Gebhardt
 and Reed, Inc.
 Rockwell Company, W. S. 180, 192
 Agency-Spooner & Krieger
 Roots-Connersville, A Division
 of Dresser Industries, Inc. 15
 Agency-Fuller & Smith &
 Ross Inc.

S

Santa Fe Tank & Tower Com-
 pany 124
 Agency-Tilds & Cantz
 Sarco Company, Inc. 60
 Agency-Gui Binz Associates
 Schutte and Koerting Company 71
 Agency-Harris D. McKinney,
 Inc.
 Scott Aviation Corp., Safety
 Equipment Division 121
 Agency-Melvin F. Hall Ad-
 vertising Agency, Inc.
 Screw Conveyor Corporation .. 82
 Agency-R. J. Skala Company
 Sethco 134
 Agency-Harry Hurst Adver-
 tising
 Shell Chemical Corporation 19
 Agency-J. Walter Thompson
 Company
 Shriver & Co., Inc., T. 189
 Agency-Spooner & Krieger
 Sier-Bath Gear and Pump Co.,
 Inc. 144
 Agency-Thoma & Gill
 Sirrine Co., J. E. 150
 Agency-The Roland G. E.
 Ullman Organization
 Sly Manufacturing Co., The
 W. W. 123
 Agency-The Bayless-Kerr
 Company
 Smith Corporation, A. O. 7
 Agency-Henri, Hurst &
 McDonald, Inc.
 Southwestern Engineering
 Company, Sweco Separator
 Division 170
 Agency-The McCarty Company
 Sparkler Manufacturing Com-
 pany 48
 Agency-Kreicker & Melan,
 Inc.
 Special Screw Products Co.,
 The 194
 Agency-C. D. Heiser
 Spencer Turbine Company, The
 176
 Agency-W. L. Towne Adver-
 tising
 Sperry & Co., D. R. 116
 Agency-Simmonds & Sim-
 monds, Incorporated
 Spo Incorporated 177
 Agency-Penn and Hamaker,
 Incorporated
 Spray Engineering Co. 144
 Agency-Larcom Randall Adver-
 tising



**A combination
 that's hard to beat . . .**

FULLER-KINYON PUMPS and FULLER ROTARY COMPRESSORS

Top photo: Two Fuller-Kinyon Pumps installed in a cement plant. One conveys 80 tons of raw materials and the other 360 barrels of finished cement an hour. Lower photo: Fuller Rotary Single-stage Compressor furnishing air for the raw material pump, capacity 1044 c.f.m., 26-lb. pressure.

FULLER-KINYON: The system that is recognized as the outstanding means for conveying many types of dry, pulverized materials from processing equipment to storage bins and silos; from storage to packer bins, process, cars, ships, and barges. Also used for unloading from cars, ships, and barges. For certain requirements the system can be remote or automatically controlled. It meets every demand placed upon it—full capacity can be economically maintained up to the maximum conveying distance. Safe, clean, efficient conveying.

FULLER ROTARY COMPRESSOR: This compressor delivers a uniform flow of air, without pulsations, discharging the air directly into the Fuller-Kinyon Pump, without unloaders

or air receivers. Connected thus, the power input conforms automatically to the work-load (back pressure) of the conveying system. Air—where and when needed to do the work in an efficient and economical manner.

Why not take advantage of Fuller's 26 years of experience in the field of conveying the next time you have a conveying problem? We'll be glad to work with you and give you the benefit of this experience.

FULLER COMPANY, Catesauqua, Pennsylvania
 Chicago 3—120 So. LaSalle St.
 San Francisco 4—420 Chancery Bldg.

Fuller **26 YEARS' EXPERIENCE IN PNEUMATIC CONVEYING**
PIONEERS OF HIGH-EFFICIENCY VANE-TYPE ROTARY COMPRESSORS

When inquiring check CP 2686 on handy form, pgs. 2-3

P-149

Is a Specialist in LEAD PRODUCTS

Really a Better Supplier for YOU?

There is a theory that a man who specializes in mousetraps will build better mousetraps than one who makes merely wood or metal products.

Others say, "Specialists are those who know more and more about less and less."

Federated believes that the hundreds of products of non-ferrous origin have a basic family resemblance, and that the more we know about all, the more we know about each. Thus lead is found with silver and antimony, and copper and tin are found with iron. These various elements and others must be separated and refined, or in some cases, discarded. Then, re-combined in different ways, they make brass, bronze and aluminum ingots; solders and type metals; die casting alloys, lead products and bearing metals; anodes for plating and for cathodic protection.

Federated's competent organization of scientists and technicians, and its widespread field force of servicemen are unified under the central policy of producing quality products and making these products most useful to every Federated customer.

We count it an advantage to our customers that Federated's organization is big enough to specialize in quality control and service from the depths of the mine to the user's shop. It is one of the reasons that Federated is known as "Headquarters for Non-ferrous Metals."

Federated Metals Division

AMERICAN SMELTING AND REFINING COMPANY
120 BROADWAY, NEW YORK 5, N. Y.

In Canada: Federated Metals Canada, Ltd., Toronto, Montreal

Aluminum and Magnesium, Babbitts, Brasses and Bronzes, Anodes,
Die Casting Metals, Lead and Lead Products, Solders, Type Metals
When inquiring check CP 2687 on handy form, pgs. 2-3



Tough Concrete Patch Sets Instantly!

Repair broken factory floors without the usual traffic tie-up. Simply shovel INSTANT-USE into hole or rut — tamp smooth — truck over! No waiting! INSTANT-USE bonds tight to old concrete . . . right up to a feather edge. It's tough. Wears like iron. Won't crack or crumble. Install complete overlay where floors are badly chewed up. Used indoors or out. Immediate shipment.

MAIL COUPON for TRIAL OFFER and FREE HANDBOOK

INSTANT-USE

FLEXROCK COMPANY (Offices in principal cities)
3611 Filbert St., Philadelphia 4, Pa.

Please send me complete INSTANT-USE information, details of TRIAL ORDER PLAN and HAND BOOK OF BUILDING MAINTENANCE—no obligation. (Clip and attach Coupon to Company letterhead).

Name Title
Company
Address



When inquiring check CP 2688 on handy form, pgs. 2-3

To
get
more
information
on
products
see
Reader
Service
slip
just
inside
the
Front
Cover

Sprout-Waldron & Co., Inc. 175 Agency-Stephen Goertl Associates Incorporated	United States Gasket Company, Fluorocarbon Products Division 164 Agency-The Michener Company
Standard Oil Company 45 Agency-McCann-Erickson, Inc.	United States Spring & Bumper Co. 102 Agency-Alice Walsh Company
Standard Steel Corporation 120 Agency-The McCarty Company	Universal Road Machinery Co. 144
Steel and Tubes Division, Republic Steel Corporation 112, 168 Agency-Meldrum & Fewsmith, Inc.	
Stepan Chemical Co., The 33 Agency-Frank C. Nahser, Inc.	
Stephens-Adams Mfg. Co., Standard Products Division 184 Agency-Glenn-Jordan-Stoetzel, Inc.	
Strahman Valves, Inc. 182 Agency-Picard, Marsin & Redfield	
Struthers Wells Corporation 135 Agency-Walker & Downing	
Sun Oil Company 53 Agency-Gray & Rogers	

T

Taber Pump Co. 182, 190 Agency-Tyler Kay Company, Inc.	
TAGIabue Instruments Division, Weston Electrical Instrument Corporation 61 Agency-G. M. Basford Company	
Tanney-Costello, Inc. 52	
Tapecoat Company, The 50 Agency-Fred H. Ebersold, Inc.	
Taylor Forge & Pipe Works 165 Agency-Kreicker & Meloan, Inc.	
Taylor Instrument Companies 58 Agency-Batten, Barton, Durstine & Osborn, Incorporated	
Taylor and Co., W. A. 186 Agency-Emery Advertising Corporation	
Thermo Electric Co., Inc. 70 Agency-Fred Lange Associates, Inc.	
Thomas Truck & Caster Co. 184 Agency-The Biddle Company	
Tokheim Oil Tank and Pump Company 88 Agency-Jones & Taylor and Associates	
Towmotor Corporation 82 Agency-Howard Swink Advertising Agency, Inc.	
Tranter Mfg. Co., Platecoil Division 52 Agency-The Jaqua Company	
Treadwell Construction Co. 105	
Trent, Inc. 127 Agency-George C. Taylor	
Tri-Clover Machine Co. 163 Agency-Russell T. Gray, Inc.	
Tropical Paint & Oil Co., The 192 Agency-The Fred M. Randall Company	
Tube Turns, Inc. Opp. 14 Agency-The Griswold-Ebbleman Co.	
Twin Disc Clutch Company 155 Agency-Spencer Curtiss, Inc.	

U

Union Carbide and Carbon Corporation, Carbide and Carbon Chemicals Company 184 Agency-J. M. Malhes, Incorporated	
Union Carbide and Carbon Corporation, Nitro Carbon Company 9 Agency-William Eity Company, Incorporated	
United Chromium, Incorporated 106 Agency-Richard & Company, Inc.	
U. S. Industrial Chemicals Co., Div. of Nat'l Distillers Products Corp. Opp. 38 Agency-G. M. Basford Company	
U. S. Stoneware Co., Plastics & Synthetics Division 106, 140 Agency-Ralph Gross Advertising, Inc.	

W

Walker Process Equipment, Inc. 186 Agency-Hollingsworth and Collins	
Watson-Stillman Fittings Division, H. K. Porter Company, Inc. 3rd Cover Agency-McNevin, Wilson, Dalldorf, Inc.	
Waukesha Foundry Company 127 Agency-Morrison-Greene-Seymore	
Weatherhead Company, The 114 Agency-Fuller & Smith & Ross, Inc.	
Weinman Pump Mfg. Co., The 42 Agency-Harry M. Miller, Inc.	
Welding Fittings Corp. 3 Agency-W. S. Hill Company	
West Bend Equipment Corp. 152 Agency-Morrison-Greene-Seymore	
Western Precipitation Corporation 133 Agency-Dozier-Eastman and Company	
Westinghouse Electric Corporation 92, 93 Agency-Fuller & Smith & Ross, Inc.	
Weston Electrical Instrument Corp. 61 Agency-G. M. Basford Company	
Wheeler Insulated Wire Co., Inc. The 88 Agency-Edward W. Robotham & Company	
Wilson, Inc., Thomas C. 172 Agency-Michel-Cather, Inc.	
Worthington Corporation, Steam Power Division, Ejector Section 57 Agency-James Thomas Chirug Company	
Worthington Corporation, Steam Turbine Division 55 Agency-James Thomas Chirug Company	
Worthington Corporation, Vertical Turbine Pump Division 56 Agency-James Thomas Chirug Company	
Wyandotte Chemicals Corporation 31 Agency-Brooke, Smith, French & Dorrance, Inc.	

Y

Yale & Towne Manufacturing Co., The 72 Agency-Rutbrauff & Ryan, Inc.	
Yarnall-Waring Co. 180 Agency-The Michener Company	

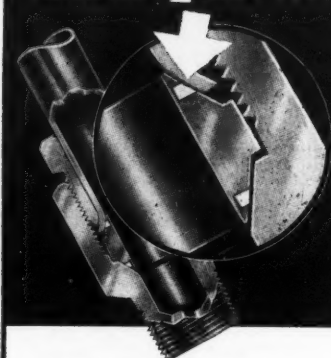
Fitting Problem?



ONLY

Koncentrik

flared-tube fittings
(in Stainless or Monel)
give you the
PATENTED 2-WAY SEAL



1. Double-sealing, self-centering seat is Teflon-reinforced to give you DOUBLE protection against costly, dangerous leaks.
2. Heavy-duty, fatigue-proof . . . designed for high pressure use.
3. Easy to install.
4. Economical . . . parts interchangeable and reusable.
5. Complete line for tubing through 1" O. D.
6. Prompt shipment through leading Stainless distributors.

Our engineers will be glad to work closely with you in solving your special tube fitting problems.

THE SPECIAL SCREW PRODUCTS CO.

5445 Dunham Rd., Bedford, Ohio

Send for Proof

Literature covering Koncentrik fittings, and Powell valves with machined-in Koncentrik connections, now available. Write today.



When inquiring check CP 2689 on handy form, pgs. 2-3

CHEMICAL PROCESSING

"That's Interesting"

Deep-seated corrosion

The Icelandic government has retained an engineer from Sam Tour & Co., Inc., to investigate means of preventing corrosion in municipal heating systems which derive their heat from underground hot water springs. The hot water is pumped from the underground springs at an average temperature of 190°F.

Buoyant plastics

A plastic material has been announced which, during reaction, expands to a large volume, trapping many small gas bubbles. The plastic hardens as it foams, and is reported to provide a buoyancy fifty to a hundred times its own weight. A man overboard could break a small tube of the material; which would fill his clothes with foam, and harden to keep him afloat. The same technique might be applied to aircraft forced down at sea or to a flooded ship's compartment. (The Reed Research Foundation, 1048 Potomac St., N.W., Washington, D.C.)

Gives the layman info on Govt contracts

A leaflet designed to acquaint small businessmen with some of the problems that commonly arise in connection with a Government contract is now available from the Small Defense Plants Administration, 1357 E Street N.W., Washington, D. C. The free publication discusses various types of contracts, questions pertaining to bids, and some of the main terms and conditions of typical Government contracts.

It's mutiny!

The first written record of the existence of the Atlantic Gulf current was entered in the log of one of Sebastian Cabot's voyages in the early 16th century. It was noted that the ship's beer spoiled because of the unusually high temperature in the hold. Investigation disclosed that the ship was sailing through warm water. (Newsletter — Institute of Food Technologists.)

For more information on product at right, specify CP 2690 . . . see information request blank between pages 2 - 3.



THEY'RE LOOKING DOWN YOUR PIPELINE...



Those twin scourges of industry—Lost Production and High Maintenance—are constantly drawing a bead on economical operation . . . looking down this nation's arteries for the lines of least resistance to heat, pressure and corrosion.

There *is* one way to spoil their aim: make sure that *your* pipe and tubing sections are joined with fittings of a kind that match them in chemical and physical properties, in strength and weight.

W-S Double-Diamond FORGED STEEL Fittings in both screw-end and socket-weld types give you all these qualities . . . provide life-of-the-line joints for any kind of make-up.

Literature is available . . . write for it.

SOLD THROUGH LEADING DISTRIBUTORS

WATSON-STILLMAN FITTINGS DIVISION
H. K. PORTER COMPANY, INC.

131 ALDENE RD., ROSELLE, NEW JERSEY

THESE TWO FEATURES ARE FOUND ONLY IN REINEVELD CENTRIFUGES

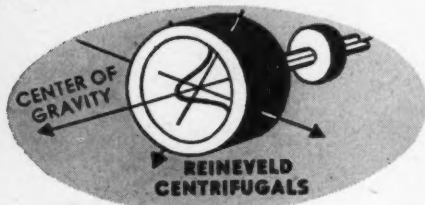
Lowest Dollar Cost Per Square Foot of Filtering Surface

This basic factor should be considered the next time you evaluate centrifuges . . . **HOW MUCH DOES EVERY SQUARE FOOT OF FILTERING SURFACE COST YOU?**

This is the essential measure of centrifuge performance because your amount of production depends directly upon the amount of filtering area in the centrifuge. And, in any centrifuge, the filtering area is proportional to both drum diameter and drum depth.

Because of its deeper drum the Reineveld Centrifuge, in any frame size, gives you the lowest cost per square foot of filtering surface.

This gives you more production for each dollar of investment.



Main Bearing at the Center of Gravity

The patented Reineveld design with the main bearing at the center of gravity provides a higher safe operating speed because the speed of the Reineveld is *not* limited by critical speed or shaft behavior.

This exclusive design provides tangible production advantages through a superior, fast-draining filter bed. In the Reineveld processing method the initial slurry is fed into the machine rapidly to deliberately create turbulence in the rotating drum. As the solids settle, the largest crystals are deposited first against the screen cloth at the bottom of the filter bed. Successive layers of crystals in an inverse sequence of particle size are then deposited until the smallest-size crystals form the top layer of the filter bed.

The formation of this superior filter bed results in lower effluent losses and a more rapid liquid drainage, reducing the spin time necessary to reach a desired dryness by as much as 50%.

For more information on product advertised on this page, specify CP 2691 . . . see information request blank between pages 2 and 3.



Curiosity can be a virtue
...when it pertains to
CENTRIFUGES



Compare All Centrifuges Before You Buy . . .

We believe that the Reineveld Centrifuge rates your comparison with every brand of Centrifuge that you consider before buying for your particular requirements.

Booklet 12-RC-2 gives you full information about Reineveld Centrifugal equipment. Write for your copy today.

Then compare in detail . . . prices, production, square feet of filtering surface, construction, weight, maintenance . . . or by any yardstick that you choose. See for yourself why Reineveld is your best buy.

Heyl + Patterson, Inc.
"SINCE 1887"

55 FORT PITT BLVD.

PITTSBURGH 22 PA

